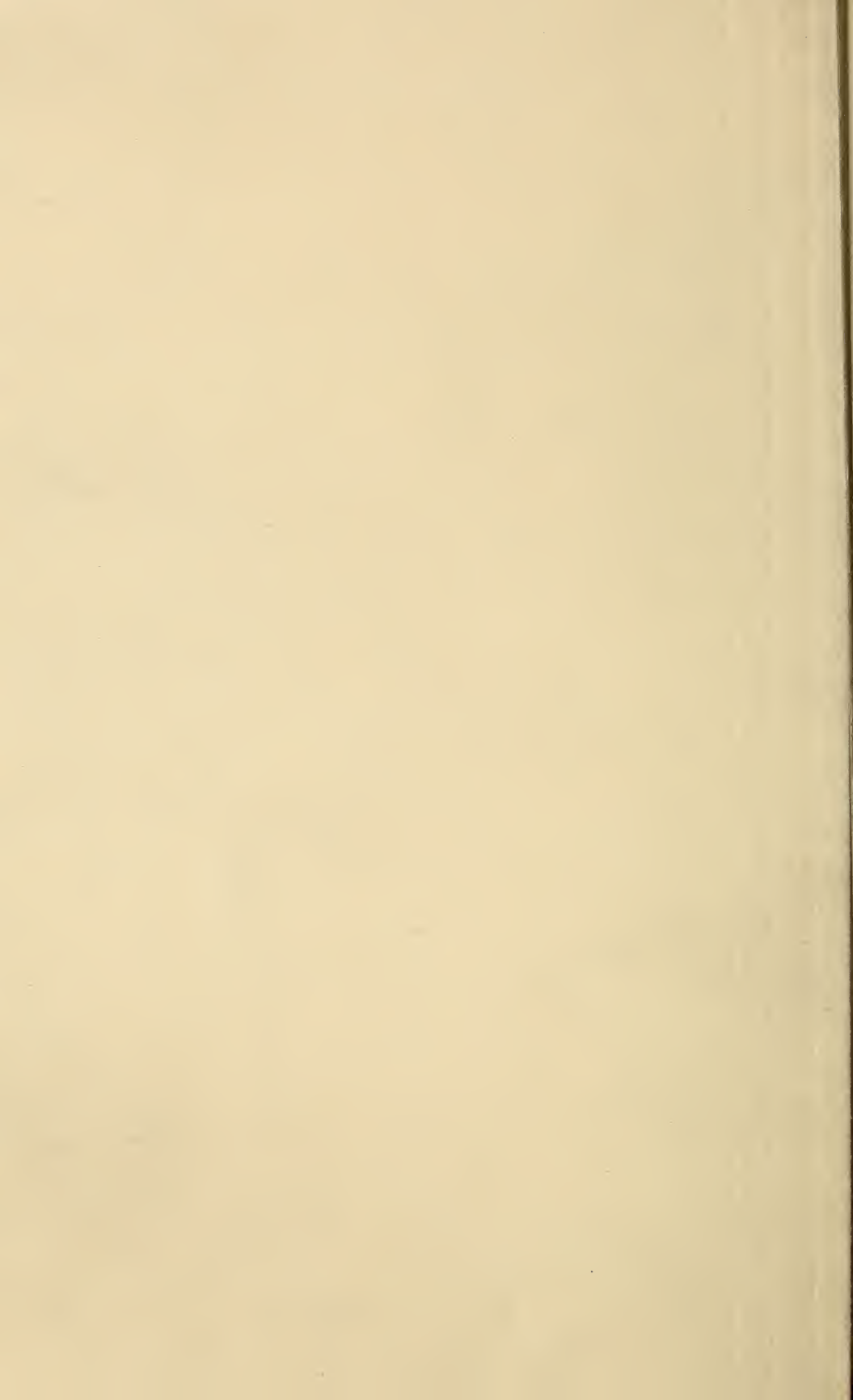


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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

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SLUMGUM, according to *Schles. Holst. Bztg.*, is worth \$7 a ton to mix with commercial fertilizers.

"IT TAKES from 7 to 15 pounds of honey to produce one pound of comb in the very best circumstances," says C. P. Dadant, *A. B. J.*, p. 691.

BEE-KEEPERS "must co-operate fully," says Prof. Cook. "and then they can get their rights. When this is done, bee-keepers will not be forced, or even asked, as they are now, to take 3½ cents per pound for the best honey!"—*Am. Bee J'l*, p. 692.

SOMNAMBULIST, the delightful dreamer of *Progressive*, has a cloud in his sky. A friend, innocent of the identity of the sleep-walker, told him to his teeth that he didn't like Somnambulist's writings. Never mind, Sommy, lots of us do—like 'em much. [Hear! hear! —Ed.]

I'LL TELL YOU just why the little cleats are better than grooves on smokers. The sharp edge of the cleat makes the smoker less likely to slip out of the fingers. A much weaker spring is required. But can't you make the outer edge of the groove sharp? [Yes, and we will do it.—Ed.]

THIN FOUNDATION without side-walls, made on the machine for the construction of which the members of the Mich. B. K. A. paid last winter, was used to some extent the past season by Mr. Aspinwall. Combs were delicate and fragile, but the foundation curls and warps terribly.—*Review*.

LIVE BEES, according to a decision at the world's postal congress at Washington last June, may be sent, after Jan. 1, 1899, as merchandise to all lands of the Postal Union. Maximum weight, 12.35 oz. Max. length, 11.8; width, 7.87; thickness, 3.94 inches.—*Luxemburg. Bztg.*

THE EDITOR of *Australian Bee Bulletin* is afraid the article of W. A. Pryal, in April GLEANINGS, about Tasmanian blue-gum, may hurt the reputation of Australian honey,

and protests that it is *not* a typical Australian honey, or a main portion of their honey crop. He pins his trust to the honey of the box-trees.

CHALON FOWLS' plan of having supers cleaned out may be a good one, but it has the fatal defect that, at the time I want supers emptied, I seldom have (and never want) colonies short of stores. But I see a ray of light for which I thank him, for it's possible that having only a small entrance to the super may make a difference.

RURAL FREE DELIVERY of mail has been tried experimentally in 29 States on 44 routes. First Ass't Postmaster-General Heath, in his report, says: "The general results obtained have been so satisfactory as to suggest the feasibility of making rural delivery a permanent feature of postal administration in the United States, not immediately or in all districts at once, but in some gradual and graduated form." Hurrah for free delivery! [Hip, hip, hur—Ed.]

E. E. HASTY, in *Review*, begs to go slow in applying the Monnier cure of paralysis, and imperil but few healthy colonies at first " (putting a healthy family into the same room with a family that has leprosy)". He thinks the disease may be only temporarily dormant, and the proposed cure may spread it. [No, it would hardly do to try Monnier's cure on too large a scale; but I do think it would be a good idea to test it in a small way.—Ed.]

AN INQUISITIVE PERSON, Ernest, reading p. 811, about the flies troubling your head at your desk, paraphrases slightly a question of yours on page 586, and says, "But why have flies in your office at all? Why not have screens and screen-doors?" [You mustn't ask questions that I can't answer; anyhow, you can tell that "inquisitive person" that it is possible to screen a single honey-room, while it may not be possible to screen the windows of a large factory. Our office is in one of our factory buildings—Ed.]

A HONEY-FAIR, lasting two days, has been successfully tried by the Hanover bee-keepers' society in Germany. For two weeks the dailies prepared the public, by articles about honey and the coming show, where pure honey could be obtained. Sixteen bee-keepers brought their wares, most of them being sold

out first day. Chunk honey was in special demand. All honey was guaranteed by society; a minimum price of 25 cts. for comb and 20 for extracted was set, but the actual average of comb was 30 cts. (one man got 35), and of extracted 22½.

FALL INTRODUCTION.—Remove a queen after breeding stops in fall; and with no brood in hive the bees are hopelessly queenless, a condition in which they never refuse a queen. So thinks W. Z. Hutchinson, and quotes Mr. Turner, who re-queens in fall and never lost a queen. [I had never thought of it before; but my own experience would lead me to believe that W. Z. and Mr. T. were right. But say, doctor, you did not tell us what *you* thought about it. Give us another Straw on the subject, and, by the way, tell us more what you think when you quote the opinions of the other fellows.—ED.]

HONEY-CAKES. The famous *lebkuchen* of Germany. Bring to a boil 2 lbs. honey with ½ pt. water. While still warm, mix with 2 lbs. flour; knead well and set away for some days (the longer the better). Then stir in 3 yolks of eggs, with flour, and plump 1¼ oz. bicarbonate soda previously dissolved in water. Mix well. Add, according to taste, 2 lbs. sugar, some crushed cinnamon, cloves, citron, and chopped almonds; knead well, roll out to a finger's thickness, and bake.—*F. L. Thompson in Review.* [That cake ought to taste good; but I should think such an array of stuff would be rather hard on a fellow's stomach. By the way, some of the Root women have been trying your recipe for honey caramels as given in the honey-leaflet "Food Value of honey." The caramels are just fine, and to my notion taste much better than the boughten ones, and certainly more wholesome.—ED.]

PLEASE TELL WHY, Mr. Editor, the name Danzy is given to the bottom-board that I described and illustrated long ago, and that you saw years ago on all my hives. [With the greatest of pleasure, doctor. When Mr. Danzenbaker came here and showed me his peculiar style of bottom-board I said, "Why, that is Dr. Miller's." And then we looked up the back volumes, and found where you had described something similar with an illustration, but not quite the same thing, although intended to accomplish the same purpose. The construction of Dr. Danzenbaker's bottom-board is quite different. Your floor was flat on one side, with a two-inch space on the other. Mr. Danzenbaker's has one-inch space on one side and ¾ on the other. Your board was made of ¾ flooring nailed on to two side-pieces, while you will note that Mr. Danzenbaker's is made up of ¾ stuff let into grooves of two side rails. And then, too, his is so constructed as to permit of a shrinkage and swelling of the boards without splitting. Your old board could not be used with the modern Dovetailed hive with no bee-space under the frames. The name "Danzy" is therefore applied to a *peculiar construction* of the bottom-board, and not to a board that may be used the same as you used yours.—ED.]

SEPARATORS, p. 814, are advised in shipping-cases, so when a section breaks down it won't break down others. But isn't it cheaper not to have the first one break down? I can't imagine a necessity for more than one section in a thousand breaking down, and that one section shouldn't be shipped. [Ye-s-s. If everybody were careful not to ship any honey that would break down, and the freight *smashers* were freight *handlers*, we should not need any no-drip shipping-cases—that is, I mean cases with paper trays with little cross-cleats; and yet you yourself acknowledge these to be good. We can not take too many precautions. In the first place, ship only such honey as we feel tolerably sure will not break. Second, put it in no-drip shipping-cases. Third, put separators between them. The last two items cost but a mere trifle, and might save a hundred times their value in honey that might be broken down by freight-smashers or truckmen, who somehow are able to smash even the strongest trunks ever built, to say nothing of honey put up in the best way possible. We must provide for the unexpected, even though the "unexpected" may not happen once in a hundred times.—ED.]

SORRY TO SAY, Ernest, we're not nearly so smart as you want to give us credit for, p. 802. I can't say how much time we did devote to that honey crop, but I know that two of us did all the work except what help we had from Ghordis and Philo. Their help would amount in all to less than one man's work for two months. Perhaps one man would have done in a month what both of them did. So, "I know that two of us did all the work except" what Ghordis and Philo did—"perhaps what may be equivalent to two months' work." [Ah, I see—no, I don't, either. You haven't yet told us *how* many days you and your women-folks spent in harvesting the honey crop. You simply tell us that two of you did all the work except what Ghordis and Philo did, and that their work would be about the equivalent of two months. What I should like to know is this: Did you and your assistant spend *all* of your time during the other ten months in harvesting the crop, or were you busy a part of the time at something else? I know for one thing that you write for GLEANINGS, the *American Bee Journal*, and a number of other periodicals. I know, also, that you spend some time in Sunday-school work, and a little time in raising posies; perhaps some time in running a small farm—and in mowing "weeds and things" in front of your place. I know, also, that Emma helps a good deal about the housework. Now, what I am trying to get at is this: *About* how much time in days, of ten hours each, did you two spend in harvesting that crop, from the time of putting the bees into the cellar to the time of putting them in again? Just give us a good guess, if you can not do any better. The time, if get-at-able, would be very interesting for the reason that we then could arrive approximately at the cost of that honey per pound, making due allowance for interest on money invested in appliances, deterioration, and changes.—ED.]



Family Matters; Traveling over the Country;
Something of the Resources of the Country.

BY R. C. AIKIN.

This is Oct. 26, 1897. The Muser has been absent from the columns of GLEANINGS for several months, and very busy months too. During these months the little owl that sits on the end of the ridge-pole has been frequently seen and heard, but the Muser had not time to reduce her wise looks to the language of common humanity. Now that the wind howls and snow flies this wintry day, we will get the Muser's thinking-machine oiled and polished, ready for grinding out wisdom. While the rust and gum are wearing off we will give a somewhat reminiscent muse or two on other than bee topics.

The editor was so kind as to prepare a picture of the family of which the Muser has the honor of being the male member. Just "we three" and the little owl is all there is of us. The editor forgot to put the little owl in the picture, and, worse still, forgot to put the picture in GLEANINGS. You see he got just the picture made without telling the Muser any thing about it, and the first the Muser knew it was done was after the former musings were all printed, when along comes a letter saying the editor wanted some kind of article with which the picture might appear; so here it is, and now you can see the Muser as you will

find him when he returns from the loft and the company of the owl.

September 2, 1896, we started on our overland journey. Baby Eva was eight months old when the photo was taken, and eleven months when we started on the trip. She now sits beside me as I write, fat and hearty, and busy helping mamma sew.

Our county, Larimer, lies on the north line of the State, just south of Cheyenne, Wyoming, and embraces a large territory, including a part of the mountains, and is probably 60 miles wide from north to south. Loveland is near the south line of the county, and is about 35 miles nearly east from Long's Peak, one of the highest mountain-tops. Our railroad is a part of the Union Pacific system, but now operated by the Denver and Gulf, and runs northward from Denver, and parallel



R. C. AIKIN AND FAMILY.

with the mountain range. The general course of the mountain range is nearly due north and south, and about every ten or twenty miles is a river or stream coming out of the mountains, all having a general eastward trend. To the north of us is the Poudre River, on which is Fort Collins, our county-seat,

a town of 2500 or 3000 population. Loveland is due south of Fort Collins 14 miles, on the Big Thompson River, and has a population of 1500. From Loveland we journeyed south 7 miles to Berthoud, on the Little Thompson River, and from there 10 miles south to Longmont, on the St. Vrain River, where we spent the night with Mr. J. B. Adams. Still south from Longmont is Boulder Creek and one or two more small creeks before we reach Denver on the South Platte River. From Loveland to Denver is about 50 miles—almost due south.

This territory, from Denver north about 75 miles, is perhaps the best-watered part of the State, and is a grain, hay, and stock country. The principal crop is wheat; second, hay; third, potatoes. The climate is alike throughout this region, but soil is very variable. Loveland has a clay soil, while Greeley, but 20 miles away, has a very sandy soil. Greeley is the center of the potato industry, and is famed for both quality and quantity of her "spuds."

There is also quite an industry in parts of the country in producing small fruits—principally strawberries and raspberries. Loveland, besides supplying her own market, ships large quantities of strawberries and raspberries. Apples, too, are largely planted, though but few orchards are in full bearing; but, judging from the results of the older orchards, and the great number of new ones started, I should say that, in ten years from now, there will be a big business in apples.

As alfalfa at present is the second crop—if not fully equaling wheat—we naturally find many bees throughout the country. Longmont and vicinity of Denver have probably more bees to the square mile than any other part of the State this side of the "range." The western slope, no doubt, has many bees too, though I doubt if any more than this region. In 1892 the number of colonies of bees in Boulder Co. was estimated at 18,000, which, yielding 25 pounds, would give 20 carloads. Outside of the towns, I should judge that one-fourth of the homes have from one to ten or more colonies of bees, and that within 75 miles of Denver there are bees enough to produce fifty or more carloads of honey, if they were properly handled.

All this country is watered by the aforementioned streams, and to take away these waters would be to lay desolate what is now a fruitful country.

So the first end of our trip was through this fertile, well-watered country going crosswise of the streams. We called on but four apirists in going to Denver, because we were so late getting started that we could not visit much if we were to see all the country we had mapped out to traverse, and yet get to the Lincoln convention.

From Denver we continued south, passing through much barren country and some nice watered tracts, the greater part unwatered, till we reached the Arkansas River at Pueblo. Here and there we saw bees south of Denver, but they were scattering.

Denver is a nice city, but wretchedly wick-

ed; but the place of the greatest display of wealth was Colorado Springs. This is the place of residence of many of the mine-owners in the Cripple Creek district. Were it not for the mines I do not see how the place could survive, for the water-supply in that region is very limited, and very little farm produce raised. Colorado Springs must draw her supplies from other parts of the State.

You may wonder why the mine-owners should live in a town or city out of the mountains and many miles from the mines. I am not sure that I can give all the reasons, or even the principal ones; but the great elevation of the country where the mines are located makes the winter season extremely cold and disagreeable. Then, too, many can not stand a continuous residence at so great an altitude. The high altitudes are hard on heart and nerves. The writer finds his heart running about five beats per minute faster here than in the Missouri Valley, though not up to normal even here, 5000 feet. Could wife and I average the speed of our heart pulsations it would probably be better for both of us. The highest point we touched was at Palmer Lake, over 6000 feet, where wife said she did not want to stay long; but as for myself I felt no inconvenience whatever.

Pueblo is about 200 miles south of here, and from there we turned our faces eastward. The city seemed to be largely a manufacturing one, and a distributing-point for the mines.

Continued.

MARKETING HONEY.

How the Home of the Honey-bees is Making Live Bees not only Gather Honey, but also Sell it.

BY A. B. WEED.

The subject of marketing honey is second in importance with the bee-keeper only to that of getting it. Much has been said about extending the market for it; but, as a usual thing, the suggestions went no further than to say, "Develop the home market." This is all very well so far as it goes; but the fact is, there never can be much demand for it where it is produced. The place to sell it is in the cities.

There are difficulties in pushing the honey trade, which do not exist in selling most other eatables. Sales are not often made by men who have an interest in it and who understand it, but by commission men. The charge of adulteration has been made so persistently that it is looked upon with suspicion. Then it has had to take its chances with other things which are put upon the market by men who know how to make their wares attractive.

This matter of suiting the trade, and tempting buyers, has grown to be a trade in itself. Almost every thing which is sold has the benefit of this kind of skill more than honey. The best way to increase the sale of any thing is to place it in an attractive form before the people who need it, and this is what the A. I. Root Co. have undertaken to do with honey.

A good display of honey was prepared, and with it some bees in an observatory hive to attract the attention of the crowd. It might be observed here that they are an excellent thing for this purpose, and the crowd which they draw will frequently reach to and even into the street. The first city in which it was shown was Akron, Ohio. This place was selected because conditions seemed to be favorable for a good market. The city was of good size—40,000—and, as most of the people worked in manufactories, they would have money to spend. The venture was tried upon a very small scale at first, and two gross of one-pound glass jars were offered for sale. At first they went fast; but as the number of remaining ones grew less they did not seem to be noticed. But sales started up again as soon as more jars were put with them. The crowd which the bees drew seemed to overlook the honey unless there was enough of it to make a big show. This fact is a very important one, and should be observed by any one who tries to sell honey in this way.

Both comb and extracted honey were offered for sale, side by side, but the people preferred the latter. This seemed rather surprising, as the demand had always been the other way. The reason was that they had never before seen extracted honey which tempted them as much as this did, and they had always looked upon it with suspicion. But here was some that they had seen taken from the combs, and they had been made to understand why it could be sold cheaper than if the comb went with it. They now had confidence in it.

One of the most important things noticed about the enterprise was the fact that the honey was bought by all classes of people alike. Rich people bought it because it was pretty and tasted well, and poor people bought it because it was good and cheap.

In starting an enterprise of this kind the first thing to be considered is the fact that most people know but little of the apiary, although a few think they do. They have read that honey is adulterated, and that it is manufactured, and most of them are glad to meet some one who can really tell them the truth about it.

The most surprising thing, perhaps, about the business is the interest taken in it by city people. This is so great that it can be used by the dealer to bring his honey to their notice. Then if it looks attractive they will buy it; and if it is good they will like it, and the demand is established.

Every thing connected with the apiary is useful in getting their attention. Things which the bee-keeper is apt to overlook because so familiar with them are wanted as much as any thing else.

Any one who starts out to make a show of this kind must have a good stock of patience and breath. Many of the questions asked are intelligent ones, and these, of course, should receive attention; but very many are prompted only by curiosity. It is not always safe to give a perfectly truthful answer to such, because, the stream once started, there would be no ending. On this account it is some-

times best to obey the biblical injunction literally, and answer some people according to their folly.

One old gentleman, however, would not be put off in this way. He had never kept bees, never expected to, and had no reason for taking so much of my time. I finally said to him that I had told him all I knew, and handed him a copy of the A B C, directing him to learn it by heart; and then, if he felt the need of further instruction, come to Medina, the center of bee-knowledge, and the Root Co. would see what more they could do for him.

There is always at least one "smart" person in every crowd who knows just how strained honey is made, and can tell all about the way "comb is made of paraffine, filled, and then capped over with a hot iron." One of this kind explained the whole process to me lately, while the crowd listened and admired his wisdom. He did not know that I had any thing to do with the display. I thanked him for his information, and asked him if he believed what he said.

"Of course I believe what I say. Why do you ask such a question?"

"Because, my friend, I will show you a chance to make \$1000."

I then read him the offer made by A. I. Root, years ago, and which has not been taken up yet, and told him that Mr. Root was good for any amount. He subsided quickly, and backed out of the crowd. These cards are useful in many cases.

Another man was very positive about a few things pertaining to the hive, but not sure on other points. He knew that the workers laid all the eggs, that the queen ruled the hive, that the drones defended it from its enemies, but could not remember what the king-bee was for! One man wanted to buy that "family" of bees and take them home in his trunk.

Here are some of the questions that I have fired at me every day. I have appended answers to a few of them, and perhaps the readers of GLEANINGS will help me with the rest.

"What kind of bees are those?"

"Those are live bees."

"Do bees die often?"

"No, only once."

"Do bees make honey?"

"No, neither do we. The bees gather it from flowers, and we take it from them."

"When do bees die?"

"When their time comes."

"Is the queen's sting poison, and will it kill you?"

"Why don't the drones sting?"

"Why don't you show us the king-bee?"

"How many bees in there?"

"How do you count them?"

"What do you use so that they won't sting you?"

"Were those bees wild once? and how did you tame them?"

"Ain't that drone there the daddy of them all?"

"Ain't they crowded in there? and don't the big ones hurt the little ones?"

"They look real sociable in there, so close together."

After one has heard such questions upward of a thousand times he begins to be tired; but after all, they show how much interest is taken in the subject by people who can easily be turned into honey-eaters.

One lady was heard to say to a friend, "That strained honey is a fraud. I bought some once, and it all went back to sugar. I was real careful of it, too, and kept it in the ice-box."

Such things show the ignorance with which we have to deal, and the need of popular education about honey.

Another lady said to me, "That honey," pointing to a glass jar of it, "is the nicest I ever saw." It was just like all other honey, except that it was put up in better style. Such things demonstrate the necessity of making it attractive. Only a few feet away there was an open box of one-pound tin cans of honey. Nothing had been done to bring it to the notice of buyers. No one bought it, and not many people even knew it was there.

There is one means of effecting sales which is particularly good, and ought not to be neglected. It is giving free samples. If you can succeed in getting a spoonful of honey into a person's mouth he will want more. I found that this bait would catch not less than five people out of six.

The honey used was California sage, and every one of the thousands who tasted it was very much pleased with it. Some other kind might have answered as well, but this it was which was used.

[I will explain to our readers that Mr. A. B. Weed is a brother of Mr. E. B., the foundation-man. For some time he has wanted to demonstrate that he could sell honey by making a show of live bees in a hive. When he told me his experience in that line, and how he drew crowds in the city of Detroit, I told him he might at least make an attempt. He prepared an exhibit, consisting of an observatory hive containing bees and a queen, some small cages containing each a queen, a few bees, and some drones. Along with this was an assortment of extracted honey put up in glass, an extractor, and comb honey in sections.

The experiment was tried first in our own town; but owing to the fact that everybody in Medina is familiar with bees it did not take as well as it did in Detroit. But still it helped materially the sale of honey in our local grocery, where the experiment was tried; and as Mr. Weed was desirous of trying it in another place, he prepared a similar exhibit for Akron, a city of about 40,000 inhabitants, about twenty miles east of here. As he explains, he took along two gross of jars (No. 25) of honey, and a can or two of California sage in bulk. The exhibit was made at one of the most prominent groceries, and the effect was instantaneous. Not only were crowds drawn, but honey began to sell in that grocery as it had never sold before. Mr. W. intended to stay only a week, because we were fearful the

experiment would not be a success; but at the end of that time he had cleaned out nearly all of our extracted mountain sage, and nearly all other odds and ends, and received instructions from Medina to keep right on. We now have a whole carload of beautiful mountain sage on the way, and we hope to be able to supply Mr. Weed with extracted honey of fine quality, to permit him to carry out his dreams that he has been incubating for several years, to make honey sell in groceries where it had been slow sale before.

When Mr. Weed calls on a grocer he asks simply for the privilege of space in a window, and stipulates that, for the first two days, he will make the display and sale of honey for him without charge. The groceryman makes all the sales, but is to buy the honey (of us, of course), and his profit will be the difference between wholesale and retail. In two or three instances Mr. Weed was requested to stay not only two days, but a whole week, at each grocery; and the way our women-folks have been busy putting up the extracted honey the past week or so shows pretty conclusively that the scheme is a success.

Live bees are indeed a real novelty to the average person. The habits of the interesting insects are briefly explained by Mr. Weed, the method of producing comb honey illustrated, and the *modus operandi* of extracting shown.

I omitted to state that, on top of the observatory hive, is put a row of sections of sealed comb honey. Mr. Weed explains how the comb honey is produced. He has also some extracting-combs filled with sealed honey. When he gets big crowds he extracts two or three combs to show how the job is done. This one fact alone inspires confidence in the consumer, and of course he not only buys what *is* real honey, but what he honestly *believes* to be a pure article.

Mr. Weed has another scheme. When the crowds will not buy he has on hand a lot of paper spoons—oblong strips of stiff paper about two inches long and an inch and a quarter wide. He curves one of these into a sort of trough, dips it into the thick mountain sage, and transfers it to his mouth. Handing out the "spoons" he invites the crowd to do likewise. Of course, there is a smacking of the lips (the spoon thrown away), and, "Um, um! that's good; I must take some home to my wife."

Perhaps it is a little late yet to make an exhibit of live bees, but we are doing it all the same, and I can assure you it is a great holiday attraction.—Ed.]

SELLING HONEY DIRECT TO GROCERS.

Giving Commission Houses the Go-by; Selling Honey by the Piece Rather Than by Weight; a Racy and Interesting Article.

BY MORTON'S BROTHER-IN-LAW.

One day, about the first of October, Morton and I were busy scraping sections, and not sorry to see the end of that tedious task ap-

proaching. The summer had been fine, viewed from a bee-keeper's standpoint, and a good crop of comb honey was nearly ready for the market as a reward for time and labor expended. My thoughts had been running in the direction of a fishing-excursion now that a little leisure time seemed to be in sight, when Morton broke in with something like this:

"I am not sorry to see the last of this pesky scraping; but the tug of war is yet to come—the one part of the bee-business, and one of the most important parts too, which we bee-keepers don't seem to improve upon any. In fact, we go on from bad to worse; and that is to sell our honey after we get it."

"Well," I said, as he paused to lift over another super, "no one could expect you to sell it *before* you get it," which obviously sensible remark he disdained to notice, but continued:

"I can get honey ready for market in style that I am not ashamed of; take care of my bees all right, and even attend the conventions and picnics without flinching; but when it comes to selling the honey for a price which I am entitled to in all fairness for such nice honey as that lot is—why, I don't know how it is to be done. We producers keep sending our honey to the big cities, where the commission man sells it to a customer that he wishes to please *first*—the bee-man last. The dealer may be honest, of course; but the man who buys of him has the best of the situation every time. Then we send so much honey to two or three large cities that they are overstocked; the market is glutted; down go quotations; everybody who sells or buys honey governs himself accordingly; and after a hard summer's work we get it where the chicken got the ax;" and, going out to the grapevine, he picked the largest bunch of grapes he could reach, and went to see if the bees were all out of those last few supers over the escapes.

Said I to myself, "Who is this customer that the commission man is so anxious to please?" and the reply was easy enough—the retail grocer. He sells the great bulk of comb honey, without question. But how does the city commission house catch that retail grocer in the first place? By drumming the trade, sending out that knight of the grip, "talking like a blessed angel, eating like a blasted tramp."

"See here, Morton," said I, as he came in with a super full of sections, without a bee left in it (who would keep bees without using escapes, anyway?) "I've got a scheme."

"Don't doubt it," was his reply; "you never seem to be out of stock in that line," and he went after another super.

Such a little bluff as that never disturbs me. I'm used to 'em; and my thoughts cantered on in that same channel.

Now, if the grocer is to be patted on the back, his feathers smoothed the right way, why don't we honey-producers do it ourselves without paying any city commission man to do it for us? Isn't it the best way to please him, to so pack, grade, arrange in attractive shape, and, above all, give him a margin of profit, without any "unexplained residue of

facts" in shape of unsalable goods to make him wish he had never *seen* any honey? Morton had resumed scraping sections, and now wanted to know what my scheme was. To state it briefly, it was to skip the commission man in the city, and sell directly to the grocer.

We talked over the plan at length, and could see good reasons for and against; but, on the whole, we thought it would pay a trial; and after three seasons' successful sales you can put us down to vote in favor of the plan.

Our locality is about 300 miles from New York, with a dozen or more cities and towns between. What nonsense and waste to send our honey to the big city, pay freight, drayage, commissions, exchange stealings (?) drummers' wages and expenses, to come half way back and sell that same honey to the grocer!—more drayage, freight, etc., and the consumer must foot all these bills. On the other hand, the retail grocer seldom buys more than five or ten cases, and it is more trouble to take care of so many customers than the one commission man. The expense of going over the route with sample case is considerable, and bad debts are nearly always in evidence; but by selling some of our neighbors' honey (this year I sold for six apiaries), and dividing the expense, it brings it down to reasonable limits.

The next question was, "How shall we pack, grade, and advertise to best please our prospective victim, the grocer?" Morton and I were partners in the retail-grocery business for several years, and that experience helped us to some points, one of the most provoking of which is the ease and certainty with which a clerk will punch a big hole in one nice section of honey with the sharp corner of the one he is trying to put back in the case. Can't we fix something, some way, so that he can not do that? Sure! Slip veneers (or sliced separators) between the rows of sections in the shipping-case—they are good for nothing else, and cost but little (and have proved a drawing card with our customers). Always have new neat shipping-cases with the non-drip cleats in the bottom, *and* the veneers. So our grocer now has his case to retail from that is neat, tasty, handy, and convenient.

Next comes the grading; and again the memories of old-time grocery days put a "bee in my bonnet."

"How much do you ask for that honey?"

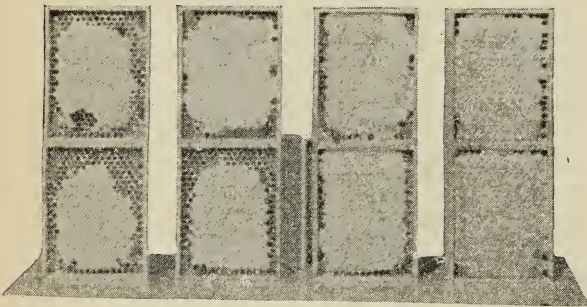
"Eighteen cents per pound, madam."

Let's see. Thirteen and a half ounces at eighteen cents per pound—um, um! Where did I lay that infernal leadpencil? um—um!

"Oh! call it fifteen cents;" and then I wonder if my customer got cheated out of a fraction of a penny or whether I did. Then that last half-dozen unsalable sections, sure to show up where they pack all weights and styles in one case! The grocer's profits are right in that half-dozen. As the days go by, and the dust settles on them more and more, with more holes punched in them as they are handled over, the profits grow beautifully less. See? Why not do the square thing by that grocer, and put in all nice full well-sealed sections, so that there will be nothing left to drag on unsold at the last end of that case;

then put the culls (that's the word) in another case by themselves, and sell them at a "cull" price? More than that, as the sections are all alike why not sell them by count to the grocer? He is sure to sell them that way to his customers. In that way there are no awkward fractions to puzzle over. He buys for twelve. He sells for fifteen. Take your choice—the last section in the case will sell as well as the first. But, you may say, honey differs so much in weight, color, sealing, travel-stain, propolis-stain; and (referring to the printed grading-rules) bulged and crooked combs (which we don't have to contend with, for our cleated separators make the bees build their combs as straight as a darning-needle stuck in a board) that it would be an impossible job to accomplish.

The engraving shows how easy it is in actual practice. I put the six sections, shown at



NIVER'S FOUR GRADES OF HONEY.

the right on the shelf, in front of me. Picking up a section from the storage-case, a glance will generally show which grade it is. If any doubts exist, hold it near to the samples and give the lower grade the benefit of the doubt—that is, after packing, the goods should be better than the samples.

The two sections shown at the right of the engraving we name "Fancy" (fancy white, fancy mixed, fancy buckwheat, as the case may be). The next two we name "No. 1." The two next to "No. 1," toward the left hand, is "No. 2;" the remaining two are consigned to the extractor. The "No. 2" isn't fairly shown up by the picture. The lower one is very full weight, but poorly sealed. The upper one is sealed well, but is capped off short—making it light weight.

This plan of grading and selling has proved very satisfactory with us for the last three years, and we have upward of one hundred and fifty customers who express themselves highly pleased with the system.

One more knotty problem to solve before we can take the road with that neat-looking sample case, which is a half-section of a regular shipping-case; and that is—the *price list*. Three grades each, for three kinds of honey; nine styles to price according to actual value, instead of weight. The "fancy" must bring a relatively higher price (and are worth it) in order to bring up the average; for Nos. 1 and 2 must be cheap to sell at all. It is a matter

of judgment for each particular salesman to consider all the conditions of his market, and get as good a price for his goods as possible, and yet allow his friend the grocer to compete with anybody's else honey of equal quality.

Referring again to the grocer's side of the bargain, we know there are many varieties of 'em. Some grocers have a "toney" trade that demands only the best of every thing, and are willing to pay for it. We can just fit his case. That "fancy" brand was selected with an eye to capture his trade. The other dealer is situated differently—wants only cheap goods. "No. 2" is what fills his long-felt want. Now, notice! Haven't we got just what every buyer delights to find—a *variety* to select from? Doesn't that very consideration build up the enormous trade of the great city department stores, "because you can purchase there any thing, from a house and lot to a postmaster-general"—if you have the legal tender? But, my grip is packed, and the train is nearly due, and I am off after that friend of ours *the retail grocer*.

Groton, N. Y.

[It does indeed seem like poor policy to ship honey to a commission house, then in many cases have that same honey come back again almost to our very door. As friend Niver well remarks, why not save these two freights, and pocket the money yourself? Referring to the engraving and to Mr. Niver's method of grading, the reader will now see where I

got the idea of having photos of certain grades of honey to take the place of grading-rules, which so far have been unable to fill the bill; for the simple reason that language is totally inadequate to describe just exactly what fancy, No. 1, etc., should be. Unfortunately, the engraving herewith shown is not a good one, although it will illustrate somewhat the idea.—Ed.]

SOLID SEALED STORES FOR WINTERING.

Treating Foul Brood; The new Section and Cleated Separator.

BY F. A. GEMMILL.

It is not often that I write for GLEANINGS, nor, in fact, for any other journal. There are several reasons for this; the principal one, however, being my inability to furnish much of practical value that has not been contributed by others having more experience than myself. As, however, Dr. Miller, in *Stray Straws*, states as follows: "F. A. Gemmill, in *Can. Bee Journal*, says he has had success wintering on solid sealed stores, and quotes McEvoy as indorsing him;" and as Mr. E. R. Root has practiced putting such combs right into the center of the brood-nest, with success, I trust you will, if not already too well supplied with more important matter, find room for this effusion.

Well, I just want to state here what I briefly stated before, and will, therefore, give an extract from the article as it appeared in the journal referred to, which may not have been seen by the readers of GLEANINGS:

An ordinary-sized colony, in an eight-frame Langstroth hive, with from 25 to 30 lbs. of good sealed stores, can be successfully wintered outside, if perfectly packed, in my locality, without moving any of the eight frames. Of course, less stores will do if wintered in the cellar. But a fair or medium colony can be wintered splendidly on five solid sealed combs of honey or sugar syrup, with division-boards or dummies occupying the space of the removed combs. After the removal of three frames of empty comb, just put in three ordinary seven-eighths-thick division-boards in place of the combs taken out, and spaced in the same manner as if they were combs of honey, only they must be at the sides of the hive. Don't worry about the empty combs for the bees to cluster on. The insects will find room for that purpose if they require it, and will always have warm honey to eat when they want it. If you don't believe me, ask McEvoy. He is a good authority on almost every thing, including foul brood and politics. If you have a half-story of the Heddon hive containing sealed solid stores of honey, put a 2-inch rim under it, then shake out the bees from the same colony into this half of the divisible brood-chamber on or about the 15th of October, or even the first week in November, and then report how the bees wintered. I know it is a success with me, for I have many a time done it. McEvoy's plan and mine are alike, except that the clustering space is not located exactly in the same position in the hive. Try either or both, and judge for yourself. F. A. GEMMILL.

P. S.—The above plans refer more particularly to outside wintering.

Now, I am not the originator of the plan, nor do I know how many may have followed such a practice; but I want to state emphatically that it was Mr. McEvoy who induced me to try his method, which he has practiced for about twenty years, so that it was he, and not myself, who deserves credit for the success I have had.

After becoming satisfied with the way things turned out I saw no reason why it should not succeed with other frames than the Langstroth, and consequently some six or seven years ago I shook the bees from 20 colonies on to a half-story of the new Heddon hive containing eight of those shallow sealed combs; and in order to provide for more room, should the occupants not be able to enter so small a dwelling, I placed a two-inch rim underneath each hive. Well, did they winter? Why, of course they did, in the very best shape, so that my success in this way was identical with Mr. McEvoy's.

To be sure, I am quite well aware *there are others* who differ with us, and think it is really a necessity to have empty combs for the bees to cluster on, etc.; and, if I mistake not, Mr. France winters in his quadruple hive on two sets of Langstroth frames, the upper story having sealed stores while the bottom story contains empty comb, which is removed in spring, leaving only one story containing the most until the colony becomes populous enough to require more room. If I am wrong, I hope Mr. France will correct me.

Mr. McEvoy claims that empty comb is a detriment rather than an advantage, as the cluster remains unbroken until the approach of spring; and, there being no brood-rearing at an unnecessary time, the bees winter better, and spring-dwindle less; in fact, they seem to boom right along when so prepared.

TREATING OR CURING FOUL BROOD.

The junior editor (E. R. R.) of GLEANINGS for Oct. 15 also gives instructions how to cure foul brood in the fall, and recommends that the bees be shaken on to foundation, and, after s arving long enough to be weak, or until the diseased honey they may have taken away with them is consumed, that two or three such colonies be dumped together into one hive, and then fed. I have not the slightest doubt that his advice is sound, and will effect a cure; but say, Mr. Root, why don't you try another of McEvoy's kinks, and just shake those bees on to five solid sealed combs of honey at once, and be done with it? Possibly you will smile at such a suggestion; but let me assure you that bees have been cured after this fashion, at this time of the year (October and November), and can be so treated again. Care, of course, must be taken that all the cells be sealed, and that the combs contain honey from sound or healthy colonies. There must be no half-doing the job, either.

Now you may probably say, "Oh, my! what about the honey the bees carry in their honey-sacs?" Well, there won't be much if you go about it properly; and what little is taken will be used long before brood-rearing is started; and there being no vacant cells to store it in can do no harm. Try it.

I will merely state, in regard to this foul-brood question, that, since the securing of legislation in Ontario, I have, in company with Mr. McEvoy, the inspector (I being the assistant), visited many diseased apiaries in the Province, and have seen many ways of curing the disease, all of which, in proper hands, will succeed; but as this article is now longer than I anticipated, and Mr. McEvoy having given his methods to the public already, I need not say more.

THE NEW SECTION AND CLEATED SEPARATOR.

I have carefully read all that has been written, both by E. R. and his father, on the above subject; and as you have assured us that the cost is not going to be a detriment, and as I use the T super and section-holder, I am certainly going to give the *new old system* a good trial next season. I may say that I have thought some of doing the very thing you now recommend in this line, for three or four years past, but never managed to do it. I have, the past summer, given the Pettit system of using his divider, having the round perforations $\frac{3}{16}$ and $\frac{3}{8}$ of an inch, in conjunction with the wedges recommended by him for the production of comb honey, and found the outside sections were much better filled than when no divider was used.

I mention the fact of having used this system here, because Mr. Pettit preferred round perforations in his divider to having them made of several pieces with a continuous opening, as you illustrate the new separator in GLEANINGS. His reason for so doing was that he found the bees were more apt to draw out the surface of the comb and give the section, when finished, a ridgy appearance. It is quite possible, as you do not mention any thing of this nature occurring with those using

the separator you describe, that no marked defect in this line has been observed. Of course, if you were compelled to furnish them with round perforations the cost would be a serious obstacle to their use.

But I must conclude; for I fear that, if I continue much longer, I shall have to apologize for writing so long, much in the same manner that Mr. Abbott did for having talked so much at the Buffalo convention; viz., that I am almost beginning to hate to see myself write, as much as he did to hear himself talk.

Stratford, Ont., Canada, Nov. 12.

[I have great confidence in Mr. McEvoy; and if he says that dumping the diseased bees on sealed combs of honey does not next summer, or some time, cause the reappearance of the disease, then I am glad to acknowledge that his way is far shorter than mine, and that bees will stand a very much better chance of wintering.]

With regard to the fence, or cleated separator, our 1898 super, with plain section and a fence, will be so modified as to take in the Pettit idea; that is to say, there will not only be fences between each row of sections, but one on the outside of each outside row. This will in effect secure the same idea, only that the slots will be oblong and parallel, instead of round perforations, and I can not see why there should be any practical difference. What matters it to a bee whether the opening is square or round, so long as it can get through the same?

It is true, there will be "ridgy" comb honey if the slats are not pretty tolerably close together. Mr. Danzenbaker has found by experience that they should not be further apart than the width of ordinary perforated zinc, which, in round numbers, is about $\frac{3}{8}$ of an inch. If further apart, it has been found in some instances that the surface of the combs will show ridges just opposite the openings; and it makes a difference, too, whether the slats are narrow or wide, if I am correctly informed.—ED.]

PIPING OF QUEENS; HOW IT IS DONE.

BY E. S. ARWINE.

Mr. Editor and Dr. Miller, are you about to turn Turk? I see you have trotted out your horse-tails. You know the dignity of a Turkish pasha depends upon the number of tails the Sultan allows him to wear. In regard to the problem of how a queen pipes, I may not understand just what you term piping. I have heard only two sounds from queens. One is the note of defiance of a young queen just emerged from her cell, and is as definitely answered by her sisters who are about ready to emerge. These sounds always remind me of the descriptions I have read of tourney victor's bugle-note of challenge, and answered by any would-be contestant for the glories of the knightly ring. I have heard this note of defiance from young queens in the cells which I held in my hand, having removed them to prevent their destruction. Surely the wings

could not vibrate very freely in the cells. But this is more to the point. I was in the apiary, and heard this sound issuing from a hive; and on opening it I found a wingless queen. She had two little knots where the wings should have been. This little deformed creature was scurrying over the comb, uttering her war-cry vigorously. Certainly those little stubby wings could do very little vibrating. She had already executed all of her royal sisters but one on the outside comb, which hatched four days later. I dispatched her at once, but wished afterward I had let her live as a freak.

A balled queen utters another sound (a cry of distress), or a sound in a different key, which always sounds to my ear like a wail of agony; so I have no doubt that Cheshire is right, and speaks from his own observation.

GRANULATION OF HONEY.

Below are tables showing the time of granulation of honey from various sources, as observed in three States:

INDIANA.

White clover granulated in 3 to 6 months.
Basswood, or linden, granulated in 1 to 4 months.
Fall honey from various sources granulated in 1 to 2 months.

TEXAS.

Persimmon (April) granulated in 2 to 10 days.
Honey-locust (May) granulated in $2\frac{1}{2}$ to 3 years.
Horsemint (June) granulated in 3 to 8 months.
Chittim (July) granulated in 3 to 10 months.
Cotton (July to October) granulated in 3 to 5 months.

The words in parenthesis show time of secreting. The secretion of honey by the persimmon-tree lasts about 10 or 12 days, and granulating always began before the honey was capped over. All the persimmon honey I ever took came from the wild persimmon-trees in Texas.

CALIFORNIA.

Sage, black and white, balled or buttoned, 3 to 12 m.
Sage, white (spicated or racemed) 3 to 12 m.
Barberry (pure) remains liquid indefinitely.
Barberry, mixed with sage or other honey, 1 to 2 yrs.
Tarweed (a species of aster) 20 to 40 days.

Tarweed honey granulates in the combs in from 30 to 60 days.

There are various other early honeys, such as manzanita and wild currant (January and February); live-oak (February and March); buckthorn and wild gooseberry (March and April); poison oak, or ivy (March to May). The manzanita and poison oak sometimes secrete honey very bountifully; also honeydew (aphis honey) (August to November).

I have never kept any of the very early and late honeys to see how long they would be in granulating. Any honey extracted green (persimmon and tarweed, and possibly alfalfa, excepted) will granulate much earlier than well-ripened honey from the same source. Persimmon honey must be extracted green to get it in the liquid state. Sage honey, if left on the hive, will remain liquid indefinitely, but will become so thick and tenacious that but very little of it can be extracted without destroying the combs. I have never kept white-clover, honey-locust, horsemint, chittim, sage, or barberry honey in the sections until granulating occurred. I very much doubt whether Texas honey-locust, California

sage, and barberry honeys would ever granulate if left three or four months on the hive after capping was completed.

Sage honey left in the hive ten months becomes so thick and tenacious that it will string out like soft wax, but show no indication of granules.

Dove, Cal.

RAISING QUEENS ON A STICK.

Doolittle's Method a Great Success; a Few Valuable Hints for Queen-breeders.

BY A. E. DEWAR.

The May numbers of *GLEANINGS* have just reached me, and I feel that I must "line up" and support my friend H. L. Jones in his remarks on the value of the "New Method of Queen-rearing."

In January last I visited the Mel Bonum Apiary, and Mr. Jones then described to me his method of utilizing drone comb for queen-cells; and although I admit that a saving in time is effected, yet, after trial, I still prefer Mr. Doolittle's plan.

I am sending you a photo showing fair average results secured, and method of procedure, which I will describe briefly. After making cells as instructed by Doolittle, insert a small quantity of royal jelly. A larva from a selected breeder is then transferred with a single stick made from a piece of section, thick at one end, to break down walls of cells, and quill-shaped at the other to lift larvæ. The frame to which they are attached is then given to the top story of a strong colony containing a queen confined under a double honey-board. Such colony is utilized right through the season for this purpose; a plentiful supply of hatching brood is given to it regu-

larly, with the result that about 90 per cent of the cells are accepted, and well and evenly developed. Should the honey-flow cease temporarily the colony is fed liberally.

I really can not understand how any one who has a large demand for queens could resort to the old style, as there are so many advantages in using artificial cells. The necessity of mutilating good worker-brood comb is overcome, and a considerable amount of time is saved, as, by keeping a proper register, the cells can be found without overhauling all the frame of the colony, and they can be left severely alone till at least the tenth day from starting. I generally use 18 to 20 cells on each frame, but have had as many as 27 accepted in one lot. I am living about 200 miles further north than Mr. Jones, but I do not think the climate has much effect on the result so long



RAISING QUEENS BY THE DOOLITTLE PLAN.

as the colonies are strong with a plentiful supply of young bees, and a fair flow of honey.

The frame in the foreground of photo shows 16 well-developed cells just ready to hatch, and they will be substituted in various nuclei, and its place will be taken by a frame with a new supply of cells, and so the process is repeated. Queens raised by me have taken

all the prizes offered at local shows during the past five years. Some 14,000 lbs. of honey, from 50 colonies, proves that they are bred for business as well as beauty.

MAILING QUEENS.

On page 335, May 1, I agree entirely with your remarks about comb honey being appreciated by bees when passing through the mails, and I hope you will continue to experiment in that line. During the past two seasons I have had eight queens from you and Doolittle; and although they were all dead I noticed that in each case the whole of the comb honey was consumed, and in one the queen was buried in the cells. Evidently her last effort had been to obtain more honey, and she died in the attempt.

I have come to the conclusion that the ventilation is of more vital importance than feed. The variation from 100° and higher, when crossing the equator, requires to be provided for as well as a probable 40° before leaving your continent. Try again.

North Rockhampton, Queensland, Aus.



BEEs FREEZING TO DEATH

Question.—I have five colonies of bees this fall, and wish to know, through the columns of GLEANINGS, whether there is any danger of their being frozen to death if I leave them outdoors, where the mercury sinks as low as thirty degrees below zero some winters. I am told that bees often freeze to death in this cold climate; and if such is the case, I fear I may not be able to winter them.

Answer.—People often say to me, "Don't your bees freeze to death out here in the cold all winter?" and I sometimes read in agricultural papers about bees freezing to death; but I always consider such talk as fallacious when it is spoken of in connection with a full colony of bees. Individual bees, or even a cluster of from fifty to one hundred, when separated from the main cluster, often freeze to death, the isolated individual bee always succumbing to the cold with a temperature lower than forty above zero, unless it warms up within 36 hours after the bee ceases to move; but a good colony of bees, in a good hive, with plenty of stores at their command, never dies from cold in a sense that can in any way be interpreted that they froze to death. If we investigate this matter we shall find that, while it is possible to freeze nearly all animal life by exposure to a very low temperature, the bees seem capable, with plenty of stores near at hand, to stand any amount of cold, so long as food remains within easy reach. To be sure, the bees on the outside of the cluster may become somewhat stiffened with cold; but those within are nearly as brisk and lively as in summer. The lamented M. Quinby, whose authority is

rarely ever questioned, knew this to be a fact when he said that the bees inside the cluster, on a zero morning, could fly as readily as in July, should the cluster be suddenly thrown apart. Then Elisha Gallup, who gave us so many excellent articles on bees during the latter sixties and early seventies, speaking of a winter in Upper Canada, says, "The thermometer for sixty days in succession was not above 10° below zero, and for eight of these days the mercury was frozen; yet my bees, in box hives, with a two-inch hole at the top, and the bottom plastered up tight, came through in excellent condition." See *American Bee Journal*, Vol. 5, page 33. While bees here in Central New York were never put to so severe a test as that, yet I have it recorded in my diary where the mercury went as low as 30° below zero one winter and as low as 28° below several times; yet, so far as I could see, the bees did not materially suffer from this extreme cold. From experiments conducted with a self-registering thermometer during several winters I have found that, with a temperature of 20° below zero in the outside air, a temperature of 45 to 46 degrees above is maintained within the hive, with the bulb of the thermometer touching the outside bees of the cluster, while an equal number of experiments with the thermometer placed in the center of the cluster of bees gave a warmth of from 63 to 64 degrees above zero, when it was from 10 to 25 below outside; thus showing that the inside bees of the cluster were very far from freezing. To test this matter more thoroughly, and prove the thing beyond doubt, I took a colony one evening, when the mercury stood at ten below zero, and suspended the hive about two feet from the bottom-board, taking off all covering from the top of the hive, so they were the same as if hung in the open air, so far as bottom and top were concerned; and as the bees did not come out so as to touch the hive in any place, they were very nearly so at the sides. They were left thus all night, during which the mercury had gone as low as sixteen below zero, yet the next morning the bees were all right, although the cluster had contracted till it was little more than half as large as it was the night before. Had they been thus left till they had consumed all the stores inside the cluster, undoubtedly they would have succumbed to the cold; but in that event it would not be a case of freezing to death, but of starving; while the freezing came in as an after-consideration.

Since trying these experiments I have come to the conclusion that the freezing of bees, when in a normal condition, is an impossibility, and that all talk about such freezing is merely idle vaporings, and that the finding of bees dead and frozen only gave proof that the freezing was an effect coming after death, produced by some other cause than cold, such as starvation, bee-diarrhoea produced by long confinement, etc.

This talk about full colonies freezing to death reminds me of the story about the poor church that wanted some hymn-books. They needed the books badly, but did not know

where the money to purchase them was to come from. So they called a meeting and instructed the clerk to write to all the book firms whose address he could find, for lowest prices on fifty books; then he adjourned the meeting for two weeks till a reply could be gotten. At the appointed time they came together to hear the result, which was that 50 cents each, or \$25.00 for the lot, was the best that could be done, with one exception. That exception offered them the books for five cents each, or \$2.50 for the lot of fifty books providing they would take books having a few advertisements in them. The matter was talked over, and it was thought that a few advertisements in the back part of the book (as we often see on the covers of our Sunday-school lesson-helpers) would do no particular harm, so they instructed the clerk to order the five-cent books. He did so. It so happened that Christmas came on Sunday that year, and the hymn-books arrived late Saturday night. The sexton carried them to the church, and hurriedly distributed them among the pews, having no time to look at them. The congregation arrived; and the pastor, arising in the pulpit, said that, as it was Christmas morning, it would be appropriate to begin their sabbath worship by singing the hymn commencing with "Hark! the herald angels sing," etc., and read the first line to the hymn from his own book, and sat down. The chorister struck up, and their surprise and consternation can be imagined when they found themselves singing:

Hark! the herald angels sing!
Beecham's pills are just the thing;
Always sure and very mild,
Two for man and one for child.

So with some people who would instruct along the line of bee-keeping pursuits; they suppose they are singing the truth, when afterward it proves to be only advertising for themselves, or idle vaporings of their imagination, or something they have heard in the gossip at the "corner grocery."

[At the time I called on friend Doolittle, and just before leaving, I said to him that I wished he would sprinkle some of the good stories, that he had given us in his convention talks, into his regular articles for print. He hesitated somewhat, saying that he could feel the pulse of an audience, but could not determine the mood of readers, whom he could not see, and for that reason he was afraid to venture. I told him to have no fears on that score—to sprinkle in the salt and spice just the same whenever they would flavor a dish of dry facts. He did not give me a decided answer that day; but a few days ago he sent the article above, and along with it a private note, in which he said, referring to the anecdote, "When it is written on cold paper it seems stale, and unworthy of a place in a sober article on bees; so I leave it to you to put it in print or to leave it out, as it seems good in your sight. If you publish it, and it takes, I can give more." Yes, indeed, give us more, friend D. Our Borodino bee-keeper speaks in a clear, strong voice; he is a large man (large in two senses) and the enthusiasm that he

throws into his talks is accompanied by a captivating sparkle of the eyes and this sort of personality may, in some cases, make some of his stories sound better than they read, but I have no doubt that they will all read well.—Ed.]



I live in Richmond, Va. I don't suppose we have as strong a honey-harvest as our brothers further north, and not so long a one as our brothers in the far South, so I should like to ask a few questions:

1. Do you think it will pay to run the business near this place?
2. Will bees store as much honey in large one-story hives as in two story?
3. Can a strong colony of bees store enough in a one-story eight-frame hive to carry them through the winter and raise brood enough to keep strong?
4. Can I keep a queen all winter with a pint of bees, on three frames of combs, and raise a large colony if I feed well? and must I give them any thing else except syrup? If so, what else? Must I feed any thing for pollen? If so what?
5. What is the best way to winter queens?
6. Can you winter two queens in one hive with a queen excluder between them?
7. Can you extract honey from brood-frames without hurting the young brood?
8. Will the extra-light section foundation work all right in brood-frames if wired?
9. Will bees work as well with frames cross-wise as they will from front to back?

VIRGINIA.

- [1. I think it would.
2. Not as a general rule. In localities where the season is short and the flow moderate, the single-story hive would probably give better results—that is to say, secure all the honey at less expense than the two story; but in localities where there is a long honey-flow, the two-story would do better for a certain length of time.
3. Yes, if they do not use it up in the fall, before winter sets in. If you have a late flow from buckwheat or some other good source, then if the colony fills its hive it will have a great plenty for winter. But an eight-frame hive full of honey by the middle of July, with no further honey-flows, would require to be fed, probably, in the fall in order to give the requisite amount of stores.
4. Yes, if you are skillful enough; but do not give them any thing but good granulated-sugar syrup.
5. The best way to winter queens is in strong colonies, in hives properly supplied with stores, and, if outdoors, in double-walled hives packed with chaff, planer-shavings, or sawdust.
6. Not as a general rule. I should expect

war in that family very shortly. Two queens in one hive, under average conditions, do not get along any better than two bosses in a shop or two cooks in a kitchen.

7. Yes, but it is not advisable. The best practice is to let combs containing brood entirely alone so far as extracting is concerned.

8. Yes and no. If a narrow starter is used it would do without wires. It would also answer in full sheets providing the wires were put close enough together, say about one inch apart; but as a general rule it is cheaper and more practicable to use ordinary brood foundation, such as is made for the purpose; and then the combs, when drawn out will be none too strong, even when built over wires.

9. Some bee-keepers think not; but, so far as I am able to judge, those bee-keepers who use frames crosswise produce just as much honey as those who use frames the other way of the brood nest. It is only a question of convenience. The frames that are used crosswise are shorter, smaller, and, consequently, there are more of them to handle.—ED.]

WAX PRODUCTION; IS IT PROFITABLE? WING-CLIPPING; HOW TO FIND QUEENS IN LARGE COLONIES.

1. How is an apiary run to secure a large amount of wax?

2. Does this pay better than honey?

3. Is spring or fall the best time to clip queens' wings?

4. What is the easiest way of finding the queen in hives that are just running over with bees?

E. O. H.

Philadelphia, Nov. 10.

[1, 2. The production of wax alone is not profitable except in localities where the honey-flow is continuous almost the whole year round, and the honey is cheap and wax expensive, as for instance in Mexico or the West Indies. I should not know exactly how to proceed in running for wax alone; but my notion would be to cut out the combs every few days, and put them in a solar wax-extractor. The honey settling to the bottom could be drawn off and given to the bees again; and the wax forming at the top could be set aside in irregular chunks until enough were secured to cake them in pieces suitable for market.

3. There is not much difference. Wing-clipping should usually be avoided when colonies are strong; and that operation should usually be performed either in the spring or fall—generally in the spring, for then the apiarist is sure of having the wing clipped *before* the swarming season comes on. At our out-ward last summer, in the case of some of our strong colonies with unclipped queens, I simply put on entrance-guards.

4. There is no easy way that I know of. Many a time have I hunted through populous colonies to find a queen whose wings were not clipped, and whose bees were pretty nearly ready to swarm. In some instances these colonies were some we purchased, and, of course, the queens' wings had not been clipped. In any case it is my practice, if I do not find the queen the first two times in looking over the

frames, to shut the hive up, then in two hours more I take another look. If I *still* fail to find her, I remove the whole stand and put another hive in its place. At the entrance of the new hive I place perforated zinc; after which I shake the bees out in front of the hive on the ground, compelling them all to pass through the zinc. If there is a queen in that hive, and she is not too small, she is sure to be caught. I have had to do this in a few instances with black bees. It is a characteristic of these bees that they will boil over, and run like a flock of sheep from one frame to another; and the queens hiding—why, they are adepts at it. When I take the time to try to find a black queen, I want two pairs of eyes so that both sides of the comb can be seen at once.—ED.]

LARGE ENTRANCES.

I had two new ten-frame L. hives with every frame filled with foundation. A large double swarm was hived in each of these hives the last week of June. The D. bottom-boards were turned over, giving the winter entrance. Then the hives were raised $\frac{3}{8}$ inch by small blocks under the front corners and a strip under the back, giving $\frac{3}{8}$ inch each side, and $1\frac{3}{8}$ inches in front. Results — no lying outside, and busy work every day when possible. The bees were packed down solid to the bottom-board, and at no time could I look from one side of the hive to the other side under the frames. There was always a bridge for them to climb on to the frames, but no comb was built in this space. When the hot weather was over, the board was inverted, giving them an entrance only in front. The season proved to be a poor one; but these two swarms gave me over 70 lbs. surplus, of which about half was extracted. Each hive was supplied with two supers. Give me large swarms and large entrances, with shade. J. L. HUBBARD.

Hendersonville, N. C., Nov. 11.

LARGE ENTRANCES; GOOD RESULTS SECURED BY THEIR USE.

I have thought for years that a hive-entrance $\frac{3}{8} \times 6$ or 8 inches was too small, both summer and winter; and after studying a long time I changed a lot of my chaff-hive entrances last winter for use this past season. With keyhole-saw I cut a strip $1\frac{1}{4}$ in. wide the whole width of inside, $14\frac{1}{4}$; and as my old entrance had a slide held in place with metal springs I have the two combined, so, if need be, I can use the small one and regulate it down to one bee or none.

I fitted in stays between the two thicknesses (outside and inside) to make even work. A full-entrance of this large size is too much some of the seasons, say in dearth of honey, as the robbers would take advantage. But if no small entrance is provided, one end of the block can be inserted, and regulate the size in that way.

I never did a thing that seems so useful. There isn't that lot of bees fanning to keep cool, and great clusters of bees on the outside of the hives as before; and I never had bees work as these have through the large entrance.

In addition to this I've made rims $1\frac{1}{2}$ in. high, and wide enough to take 8 L-spaced frames, the same extended out to fit against the inside of the front and back of my chaff hive, and just the same length inside as the common inside or lower story. Now I have raised my frames and bees, and put a rim under, so there is a $1\frac{1}{2}$ -in. space under the bottom of the frames. Thus I can easily clean out dead bees when in the cellar in winter, and shall use more packing over the bees than usual. You see the division-boards can be used the same, and the packing makes all neat and snug. It seems to me you would do a good thing by adopting something of this kind.

E. P. CHURCHILL.

Hallowell, Me., Oct. 18.

[Any one who will use a large entrance in summer can't fail to come to the same conclusion you have. How stupid we have been all these years, compelling the bees to use a poorly ventilated hive, and crowd and tumble over each other in order to get into a hive during the height of the flow.—ED.]

THE NEW FENCE AND THE PETTIT SYSTEM.

I too am very much interested in the new style of separator and section. As I understand it, the separators are to be made of narrow strips, with narrow spaces between. Referring to GLEANINGS for Jan. 15, 1897, page 52, top of right-hand column, Mr. S. T. Pettit says: "Dividers made of slats $\frac{1}{4}$ inch apart leave the sections ridgy, reminding one of a miniature washboard." This he obviated by boring the divider full of $\frac{5}{16}$ -inch holes instead of leaving the $\frac{1}{4}$ -inch spaces. Now, would there not be the same trouble in the new separators? Has any one tried, during the past season, the plan advocated by Mr. Pettit in the same article, commencing on page 51, entitled "A new system of taking comb honey; how to get the bees to fill the outside sections as quickly and as nicely as those in the center of the super"? If so, I should like to hear the results, and also how Mr. Pettit himself has succeeded on that line the past season. It seems to me this idea, taken in connection with the no-bee-way sections, might make quite a difference in the crop of nice comb honey, especially here in the East, where in many sections the honey-flow is not as copious as further west, and we need to use every means to secure all the honey our bees are capable of gathering, and secure it in the best possible condition.

Natick, Mass.

R. J. FOX.

[See answer to F. A. Gemmill, page 846 this issue.—ED.]

NO-BEE-SPACE SECTIONS FAVORED.

Mr. Root:—I see you wish to hear from those who have used sections with no bee-space. I have used about a thousand of this kind this season, and I like them so well that I will change all my supers to take this kind. All you say about their better appearance is true. I used cleats on the separators $\frac{1}{8} \times \frac{1}{4}$, but this is hardly wide enough or thick enough.

They should be $\frac{5}{16}$ wide, and a little more than $\frac{1}{8}$ thick. It will require very careful measurements to get them just right; for if they should be a little too thick there would be trouble about crating. I find they will bulge out the combs a little just below the separator. I use plain separators $3\frac{1}{2}$ inches wide. I have not tried slotted separators, but believe they would be better.

There is only one fault that I have found in using this arrangement; and that is, in cleating the separators they *must* be put on accurately. I use $\frac{1}{2}$ -in. wire nails, driving them clear through, and clinching them. Glue would perhaps be better and quicker.

W. C. GATHRIGHT.

Dona Ana, New Mex., Oct. 30.

[The fences we shall make and sell will be put together with automatic machinery, and will have to be just right. Yes, if the slats are too far apart the combs will be ridgy every time. See answer in this issue to F. A. Gemmill, on page 846.—ED.]

THE DEEP-CELL FOUNDATION A SUCCESS.

Last spring you sent me samples of deep-cell foundation. These I placed in sections, putting two sections into supers with some partially drawn combs and some thin foundation starters. In every case the deep-cell foundation was the first to be worked on, and in one super those two sections were the only ones properly filled, others varying from nothing to $\frac{3}{4}$ full. Deep-cell foundation suits me well in this year's trial.

L. D. STILSON.

York, Neb., Nov. 10.

HONEY RUINED BY SOOT.

Honey is a failure here. This is a manufacturing town, and the soot ruins all the honey for miles. Owing to the continued dry weather this year we shall not be able to send you any seed.

D. L. MURFF.

Anniston, Ala., Oct. 28.

[It has been before stated that honey-producing in a manufacturing town where there is a large amount of smoke is unprofitable. It seems a little hard to believe that soot could prevent the blossoms from yielding nectar, but it may be true. I'd like to have reports from others.—ED.]

THE FLORA ON THE COAST OF SOUTH CAROLINA.

In reply to query by "East Coast," page 739, I beg leave to say that, while we are rather outside of the limit—a little more than 100 miles from the coast—I will give enough information to provoke further correspondence.

We are told that in portions of Eastern North Carolina (in the swamp region) bees do well. We much prefer to speak of the territory west of this, Charlotte, N. C., 100 miles, or along the eastern slope of the Blue Ridge range, where we have fine bee-pasture. The poplar (tulip), holly-locust, and fruit-trees furnish the early or May crop. June brings linn, persimmon, and redwood, while the sour-

wood and other minor sources furnish the July crop. It was the writer's pleasure to spend five weeks, in 1895, prospecting in this favored locality.

A mountain location is, in my judgment, the only safe one, owing to its unlimited forests too rough to be visited by the ax or plow.

Here we get fair yields, but of an inferior quality. Ours is a cultivated field—no forests. Cotton and the asters give our best crops.

Prices are better than north or east. We get 8 and 9 cts. for extracted in a jobbing way. Four cents was C. F. Muth's best offer for our product. The tulip furnishes the only *dark* honey in our mountains. A. L. BEACH.

Steel Creek, N. C., Nov. 10.

DEATH OF A GREAT BEE-KEEPER.

I was struck, on opening the local paper this morning, to read of the death of Mr. Bonnier Georges de Layens, 63 years old. I hastened, when I went to France, to make the acquaintance of the now departed eminent French bee-keeper. He died on the 23d of October, of an apopleptic stroke. The struggle lasted about seven hours. He did not regain consciousness. His hive is well known all over France, where it has always had to compete with Charles Dadant's. The latter finally has the preference. De Layens came here to gather some more flowers to complete his "Flora," of which several editions are already out. He was born in Lille on the 6th of January, 1834. His features were not changed at all. His body will be taken to Paris, to the family tomb, as he was only temporarily here. PH. J. BALDENSPERGER.

Nice, France, Oct. 24.

MOVING TO GET MORE PASTURE; NEIGHBORS' BEES.

Bees have done well this season; but in order to get a good honey yield I had to move most of them two miles to fall blossoms. My home yard is overcrowded on account of neighbors' bees. I got 2000 lbs. of comb honey from 35 colonies, in two months, besides about 300 lbs. extracted from unfinished sections. It paid me to move them, you see.

Filion, Mich., Nov. 16.

I. S. TILT.

This was the best honey season we have had for quite a time. From 20 hives I took 1400 lbs. in sections, and now have 50, all from the 20, spring count. I have sold all this honey around home. J. E. HENDERSON.

Elm Grove, W. Va., Nov. 4.

How doth the little busy bee
Improve each shining hour
In gathering honey all the day
From every opening flower!

But this is the way it has recently been paraphrased in one of the great dailies. Besides a little mixture of gender, there is a little contradiction of facts:

How doth the little busy bee
Delight to bark and bite!
He gathers beeswax all the day,
But his stinging is out of sight.



T. W. M., Ill.—It is too late to stimulate brood-rearing. You had better unite your weak colonies, as you suggest. For particulars in regard to uniting, see our A B C of Bee Culture.

E. C. R., Ind.—I would not advise you to buy bees at this time of the year, unless you can get them at a bargain, and have had sufficient experience to enable you to winter bees successfully. It is already too late to do much in feeding them up as they require.

M. S. G., Wis.—Tarred paper used in the construction of a building will not in any way injure or affect bees. Our house apiary, illustrated and described in our A B C of Bee Culture, is lined on the inside with tarred paper; but we never could see that it was in any way obnoxious to the bees.

A. B., Ohio.—I see no reason at all why you could not move your bees in a wagon without springs, providing you put hay or straw in the bottom, as you suggest. Of course, you would need to drive more carefully and more slowly; but we have moved bees several times successfully in just such a wagon.

F. P., N. Y.—Yours of Nov. 5 is at hand, stating you have a furnace in one compartment of your cellar, and that the other part is separated off by a board partition. If you can keep the temperature in this part of the cellar as low as 40 or 45 degrees, certainly not higher than 50 during the greater part of the winter, I think you can winter bees there all right. The temperature should not go below 40 degrees, at least for any great length of time.

J. H. H., La.—We usually figure on about 10 pounds of honey per Langstroth frame—frames that are fairly well filled with honey, while 25 pounds of honey, scattered through three or four frames, is enough to carry the bees safely through the winter. If you have four or five combs fairly well filled with honey, leave them in the hive. It will be all the better for the bees next spring.

Your idea is all right; namely, to give your surplus combs to other colonies that may need it that are short of stores. This is the practice that is usually pursued by bee-keepers generally.

J. J. V., Mo.—I understand now what you mean by the controller. This, as I understand it, is only the Langdon non-swarm over which, a few years ago, bee-keepers were very enthusiastic, but which now has been abandoned as impracticable, and as not carrying out the expectations of its friends. We sold them one season, but finally discontinued selling them, as reports showed it did not work as expected. I should judge that the

leaf from the catalog is from an old one that is not now issued by the party in question.

L. E. B., Mass.—If I understand your question, you desire to know how many acres it would take to support 1000 colonies. It would be impossible to give you any definite answer, because so much would depend upon conditions and circumstances; but the average locality in the North will not support much over 100 colonies, and such an apiary ought to have a range of a radius of about $1\frac{1}{2}$ miles. Theoretically, another hundred colonies should be in another circle just touching the first one, the second circle being also three miles across, and another circle of the same size just touching the two circles already mentioned, and so on. You will find this question fully discussed in our ABC of Bee Culture, under the heading of "Out-apiaries."

W. H. L., Mich.—1. Is the odor of coal-tar disagreeable to bees? [Not to any appreciable extent.] 2. Would they reject a hive if the bottom-board were painted with coal-tar on both sides and the edges? [No.] 3. Would the odor of coal-tar taint honey perceptibly? [It probably would if the honey were stored in barrels smeared inside with coal-tar.]



IN our last issue I took so much space that I will take but very little this time, and give the space to our correspondents. In our next issue I hope to begin again my trip among bee-keepers.

GLEANINGS can be very truthfully called an illustrated bee-journal. While it makes no pretension of competing with the illustrated magazines of the day, it simply attempts to show kinks and ideas by means of pictures rather than by language, which is very often inadequate.

It does not seem to be generally understood yet that the new fence (cleated separator), and plain section (no bee-way), can be used in old-style T supers and section-holders, the same as the old section. In the case of the section-holder the cleats on the fence, together with the plain section, make exactly $1\frac{1}{8}$ inch. The only change necessary is to purchase fences. If you do not see how it will come out, send us 10 cts. and we will send you a sample fence with section, which, when you have tried in your super, you will see it will come out "shust the fit," as Rambler says. You will need to tell us in ordering a sample what style of super it is to be used in—a T super, or section-holder arrangement.

THE *Agricultural Gazette*, of New South Wales, for September, 1897, issued by the Dep't of Agriculture, Sydney, Aus., contains

an article on the influence of bees on crops, by Albert Gale. The writer shows quite conclusively the important bearing that bees have in mingling pollen from plant to plant. To quote him, he says:

I think I have pointed out clearly that there is no insect so highly developed for carrying the imperatively essential pollen from flower to flower as the hive bees. Their intelligence, their energy, their social habits, and the ease with which they are kept under control, stamp them at once as no mean ally to the tiller of the soil. The practical bee-keeper in any district is a confederate that should be welcome to all.

It is to be hoped that the whole series of articles on this subject, by Mr. Gale, may be put in pamphlet form for free distribution, as they form a very comprehensive examination of this subject.

SOMETHING NEW UNDER THE SUN.

YES, I have found something absolutely new in bee-literature. So novel and original is it that I am going to present a few paragraphs from an article entitled "The Life and Battles of Bees," by George E. Walsh, published in the *Chautauquan* for September. The writer sets forth in flowing English some of the conflicts the bees have among themselves. "Uniting," he says, "while understood by the modern bee-keeper, is a very difficult operation, and has been accomplished only after long experience and many failures; for the natural antipathies of the members of the two flocks are such as to prevent association except under extraordinary conditions." And then, in speaking of the ordinary Italian bees and the black bees of the woods he gives us this piece of information: "The hostility between the wild bees and the domesticated colony will not permit them to unite."

Now listen to this, for he is going to tell us something we never knew before—how it is that bees can recognize robbers. Just read:

At the entrance of every well-filled hive several sentinels will be found lingering, and upon the appearance of a bee they challenge it. One of the sentinels extends its tongue; and if the new comer belongs to the colony it will answer by proffering a sample of its honey; but if the bee should prove to be an intruder the sentinels pounce upon it immediately and sting it to death. Occasionally a stray bee will attempt to obtain entrance into a well-filled hive in this way, and it will offer a sample of the nectar from its honey-sac; but the wary sentinels are not often deceived, and the intruding bee pays the penalty of its temerity.

Here again is another sample:

Inside the hive, breastworks and fortifications are constructed, tier upon tier, and the attacking forces are compelled to pass through holes and narrow cuts.

The writer now goes on to tell about the condition of queenless colonies. He says, and very truly, that there will be small protuberances like peanuts sticking out of the combs; and if these are unmolested a queen will hatch. So far we all agree with him; but now read what he says regarding the philosophy of introducing by the modern candy method:

"But now a queen-bee from the South or an imported Italian queen is obtained and introduced in one of the modern queen-cages. So closely imitated is the ordinary cell of a queen-bee by this cage that the hive workers are readily deceived. The cork is removed from the small cage, and the opening smeared over with sugar paste. When this is carefully inserted in the hive, on top of the frames, over the cluster, the bees will instantly pounce upon it and liberate the

queen by eating through the sugar paste. Poor deluded souls! in their innocence they think they have hatched out a queen to take the place of their dead one, and there is undoubtedly great rejoicing in the hive.

Poor deluded souls, indeed! Mr. Walsh's great heart of sympathy is sublime. There are several other statements that do not smack of real experience, but I will give only one more on this wind-up of the article.

It should be remembered that bees deserve our respect and protection, and that to kill a bee is to waste a pound of honey.

A bee worth a pound of honey! Would it were so! If it were, a colony that produced 50 lbs. of honey would contain just 50 bees. Whew!

I am surprised that the editors of the *Chautauquan* did not recognize the absurdity of some of the preposterous statements, even though they were not professional bee-keepers. Why! the idea of making a queen-cage out of *wire cloth* so exactly the *fac-simile* of a queen-cell, and smearing over the end of it with candy so that even the bees (deluded souls) could not detect it from their own manufacture! Almost any one ought to know better than to make such a statement as that. It is very evident that Mr. Walsh got his information entirely from books, and that his vivid imagination quite ran away with his good sense. As a bee-keeper we have never before heard of him.

HOW THE OHIO PURE-FOOD LAWS WORK.

OUR Mr. Weed, who has been selling our honey in Akron, has run across some glucose mixtures put up by a concern notorious for selling adulterated honey and syrups. This same firm evidently sell their mixtures as *pure goods* in States where the laws are lax or are not very rigidly enforced. In a State like Ohio, for instance, where we have a good pure-food law, and a food commissioner who sees that said law is enforced, they put out the same goods, *but* on the back of the package they put the formula of the so-called honey, in fine print, which they are obliged to do to conform to our Ohio law. Their expectation is, of course, that the consumer will not stop to read the fine print, but take it as pure goods.

Well, it seems this concern, through its representative, sold a consignment of the stuff in jelly-tumblers to a firm in a town near Akron. They represented, at the time of making the sale, that the goods were pure; but on their arrival, or at least soon after, it was discovered that there was a small label on the back of the tumbler, containing the formula of glucose, honey, and sugar. But the goods had been paid for, and the grocer had the stuff on his hands. It would not sell, and he had no heart to push it either.

We expect to give the name of this glucoser, and all the facts in the case to the U. S. B. K. U. Personally, I believe it is a good case; and if the Union does nothing more than to expose the name of the firm, after securing the proper evidence in the form of affidavits, it will have done a good work.

From the foregoing it will be noted that the practical effect of our Ohio pure-food laws

is to do away with glucose competition in honey. Other States have good pure-food laws; but they lack good food commissioners to enforce them. Now, what can be done in Ohio can be done in other States; and I am not sure but that this would be another very good field for the U. S. B. K. U. to work in; namely, to punch up commissioners who are negligent of their duties; and, failing to enforce the laws, to secure the appointment of other men in their places. We need men with backbone to enforce pure-food laws, just as we want them in every responsible position.

CASTING BREAD UPON THE WATERS; HOW TO WHET THE APPETITE OF CONSUMERS FOR HONEY.

In order to disseminate information in regard to honey as a food, and to create a taste for it, we have been inclosing our honey-leaflet in every one of the envelopes that go out of our office. One such leaflet found its way to H. W. Richardson, Section Director of the Weather Bureau of the U. S. Dep't of Agriculture, whose office is located at Columbus, O. In a letter dated Nov. 19 he writes:

I thought your little circular on honey so interesting that I gave a copy to a reporter, requesting him to give you credit for extracts made from circular, which I see he did not do, as perhaps the newspaper regarded the same as an advertisement. Anyhow, the publication won't hurt the A. I. Root Co., as several parties have applied to me for copies of "bulletin," and I have referred them to you. If you could send me a dozen of these circulars I should appreciate it.

The result was, the reporter gave it a handsome write-up, making liberal extracts, the same appearing in the *Columbus Dispatch* of Nov. 18. This started a good many inquiries in regard to this leaflet that was styled, by the reporter, "A Bulletin issued from the Weather Station." I suppose Uncle Sam, in the reporter's estimation, gave it a sort of "tone," and that is why he gave it such a liberal notice. Well, it has done a good deal of good already.

This point struck me right here: Suppose bee-keepers were to hand a copy of this honey-leaflet to the editors of their local papers, and ask them to give it a write-up or to make extracts from it. Who knows but it would do a great deal in the way of whetting up the appetite of consumers for honey? The Section Director of the Weather Bureau at Columbus regrets that the reporter entirely ignored the name of The A. I. Root Co. We do not care a fig about that. All we care for is that, somehow or in some manner, consumers shall know about the value of honey as a food. Credit? Why, we do not want any; and I am rather of the opinion that, if our name had been used in connection with such a write-up, people would have turned away, thinking it was a neatly gotten-up advertisement. Let all names be omitted, but let the *facts* go traveling around the world. Visit your reporters and local editors. We will furnish copies free for such purposes.

Another thought comes in right here: If every bee-keeper would mail a copy of the honey-leaflet in letters that he writes it would help greatly to scatter the right kind of seed.

It is by casting our bread upon the waters that we reap.

M. G. CHASE, THE GILT-EDGED-HONEY MAN.

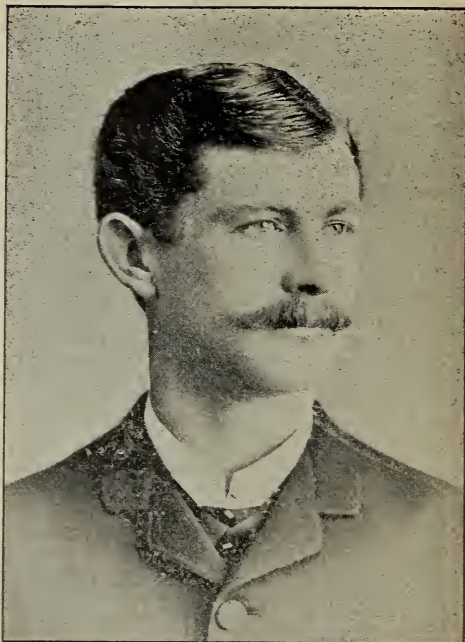
SOME little time ago I gave a picture of Vernon Burt as one of the bee-keepers in the immediate vicinity of Medina whom it is my privilege and pleasure to consult occasionally on the various subjects that pertain to our pursuit. Mr. M. G. Chase, whose postoffice address is Whittlesey, some eight or nine miles southwest of here, is another local bee-keeper with whom it is my privilege to talk bees. Whenever a new thing is brought out at the Home of the Honey-bees the opinion of both of these men is sought, and the following season they are given samples of the new things to test. During the past season, for instance, both tried for us the deep-cell foundation, and during years past they have tested for us in a similar way comb-honey supers, and various styles of self-spacing frames.

While Mr. Burt makes bee-keeping a specialty, running two apiaries, Mr. Chase manages a 200-acre farm, besides an apiary that varies anywhere from 75 to 125 colonies. He is not only a first-class progressive farmer, but an excellent bee-keeper. If there is any man in this county or in the State of Ohio—yes, and I might say in the whole United States—who produces a really gilt-edged article of comb honey, it is M. G. Chase; and he is likewise one of the first to get his honey on the market.

He took his start in bee-keeping from his father, who had 100 colonies in box hives; but the younger Chase could not keep them that way, and accordingly transferred them, increasing them to 125 the first year; and, if I remember correctly, he secured 22 cents a pound for his honey. This was away along in the early 70's. But his good fortune was quickly followed by disaster in wintering. Just how many he lost I do not know; but he quickly recovered, and ever since has been making the apiary turn out some extra nice honey. His largest yield I think, was 2700 lbs. from 20 colonies, while his smallest yield was about 800 lbs. from 80 colonies. Of late years he has not had the seasons that he formerly had. Basswoods have been cut off around him, and the clovers have disappeared; but somehow even in the poorest seasons he manages to bring up some honey when nearly everybody complains of not getting any, unless it is our friend Vernon Burt and Mr. Chase's brother-in-law, Mr. U. Prince.

And that reminds me that Mr. Prince is another of my consulting bee-keepers. The other day, when he called at our office I showed him the fence and plain sections. He would like to use them next season, but he had so many old fixtures that he could not afford to throw them away; but he was interested enough to try a few when I told him he could use his old supers. Well, this Mr. Prince runs two apiaries, or did the last I knew. The out-yard is managed on the Elwood plan to prevent swarming; namely, the queens are caged in the hives at the approach of the swarming season, and in eight

or nine days the cells are cut out, and again in eight days more. Mr. Prince says it is a great deal of work, but that, by that plan, he can handle swarms when it is convenient for



M. G. CHASE.

him to go to the yard. Mr. Prince also secures a nice lot of honey every season.

I take pleasure in introducing both Mr. Chase and Mr. Prince. They, together with



U. PRINCE.

Vernon Burt and Dr. Miller (who is also my near neighbor), act as a sort of balance-wheel on the boys; and I do not deny that we sometimes need one.



And when they had gathered the church together they rehearsed all that God had done with them.—Acts 14: 27.

Last Sunday a new Methodist church was dedicated in our town. It rained the day before, it rained in the morning, and it rained all day, so that the congregations in all the churches were probably sparse, and we thought it quite likely there would not be a very good gathering at the new church, and that they surely would not be able to raise the money to pay for it. It cost \$12,500. The sum of \$9000 had been already subscribed, so that only \$3500 was to be raised. During the day I attended our own church; but in the evening, as they had a sort of union service at the new church, I was present, and was somewhat surprised to learn that the whole of the \$3500, and *more too*, had been subscribed at the forenoon's service, in spite of the rain. The good brother who managed the matter told us that in matters of that sort there were always some subscriptions that, owing to accidents, sickness, or death, would probably not be paid; and he urged that they might raise about \$250 during the evening service, so as to be sure to have enough; and he mentioned, likewise, that there were still some things very much needed in regard to the church, if they had the money.

It was a gray-haired veteran who called for the subscriptions. He had his \$250 in a very short time. I enjoy meeting men of skill. I like to see a skilled mechanic. I like to converse with a finished scholar; and I enjoy above all things watching a man who has the power to manipulate a congregation of people—I mean, of course, where he manipulates them for God's righteousness and God's kingdom. It seems to me a little strange that a people who can not all of themselves and among themselves raise money to pay a debt will do it easily when they get some old hand in among them to stir them up to a sense of their shortcomings. I do not know very much about such things; but I have often heard that they pay a stranger from fifty to a hundred dollars, and even more, to come in among them and tell them what they *know* already they ought to do.

On Tuesday evening we had a sort of union meeting in this same church. The ministers of the five churches of Medina all sat on one platform, and we had five short sermons. Some of our older readers may remember that it was during a union meeting something over twenty years ago that I broke away from indifference and skepticism, and united with God's people; and during the evening I speak of, it kept coming constantly into my mind that my first public testimony was in a union meeting in that same Methodist church—not in the same building, but in the old building that stood on the same ground. One of the ministers was an old white-haired veteran.

He told us about church people and church-going fifty years ago. As he described it so vividly my mind went back to the meetings in the schoolhouse.

He brought many smiles to the faces of the younger ones by telling them how those evening meetings were lighted. The people who were most interested brought each a tallow candle. The candle was first lighted, then tipped over till the tallow dropped on the corner of the desk; then the broad blunt end of the tallow dip was held down in the melted grease until it "froze fast." The candle then stood securely during the whole evening unless somebody bumped it over. Another way was to stick a penknife through a candle and drive the blade into the window-casing. This did very well unless the room became too warm, and somebody wanted a window let down a little. Then the draft would make the candle "flare." Pretty soon the tallow would run down and drop on somebody's Sunday clothes—perhaps on some young man's coat that he had put on in order to take his "best girl" to "meeting." Sometimes the melted liquid dropped on some good lady's Sunday bonnet. The speaker stated that people were then a good deal as they are now; and sometimes, so Elder Cooley told us, there was "more grease on the bonnet than there was Christian grace in the heart" after the accident had happened. He said the minister sometimes used to ride horseback ten or fifteen miles to meet his appointment, and the people would hardly be satisfied, after having taken pains to go so far, unless he gave them a sermon at least two hours long. The people usually came in lumber-wagons, and he said the wagons were almost always full. In fact, they would drive around to the neighbors' homes, and the invitation to go to the meeting was seldom unheeded.

What a change fifty years have brought! A good many of the younger people who read this probably never saw a tallow candle in all their lives. Huber has seen them, for a few nights ago he had one in a Chinese lantern dangling at the tail—no, it was not at the tail, for the *kile* that carried the lantern was a modern "tailless" one. It dodged about and "cavorted" over the town during the dark night for an hour or two; and very likely lots of people will believe, as long as they live, they actually did get a glimpse of the "air-ship." Huber tried lamps, but the old-fashioned sperm candle seemed to answer best.

Well, the candles are gone; and now, in the churches, at least, the lamps are going. This beautiful new church was lighted by electricity. In the very center of the dome overhead a cluster of sparkling globes flashed and glowed like a beautiful flower, each petal of which was like unto a shining meteor; and lesser lights were scattered here and there lower down on the ceiling and along the walls. They were lighted as if by a flash of lightning, and extinguished as quickly. How convenient! how beautiful! how grand! No matter how many times I see these incandescent globes—no matter if I do meet them now at every turn in my *own home*, again and

again have I raised my heart in thanksgiving and praise to God for what electricity is doing to light and cheer our homes. Already electric globes are kept going by the power of the wind that sweeps over our heads, and they are getting to be more and more common. This church was not only lighted by electricity, but it was warmed by steam. The radiators are *ornamental* as well as useful; and by their use the room can be evenly warmed all over so there are no cold spots and almost no spots that are *too* warm. The decoration is new and very pretty. On a large plain plastered wall the figure of a shepherd's crook and of a cross is seen resting in the clouds. I looked at it again and again, and enjoyed it as I did the strains of beautiful music from the trained choir. And this reminds me that the veteran elder who told about the old times spoke about the singing in the old log schoolhouses. He said that, away back in those early days, they had some old hymns that, in his opinion, would never be surpassed. He mentioned especially the one beginning—

A charge to keep I have,
A God to glorify.

He turned to the choir, and said: "Oh! yes, you can sing it, I know you can; but you can't sing it as they did then."

Some of them smiled because he was so very positive; but he remarked again, "I beg your pardon, but you can't do it, neither can any man or woman living. Those things are gone by."

Although they had some fierce conflicts in the church in those times, they had considerable of the grace of God also. When it first began to be customary to have an organ for worship, one old deacon stood out very stubbornly. He was a man of wealth and influence. Well, the good church people, after exhausting their eloquence and grace in trying to soften him, *prayed* for him, and prayed that God would help them to get an organ. Another meeting was held, and, greatly to their astonishment, the good brother wound up his remarks something in this wise:

"Friends, if you absolutely insist on worshipping God by machinery, let us not have any poor affair brought into our church. We want one of the very best 'machines' made, and I will help pay for it."

We may gather two lessons from this incident. First, prayer avails when nothing else will move the stubborn heart. Second, there is oftentimes a good deal of grace in a man, even when he seems, to outward view, all stubbornness and flint.

Then he spoke of the progress that is being made, not only in electric lighting, steam heating, church decoration, etc., but he said he felt sure we were coming nearer to God than we did sixty years ago. He pointed to the row of ministers belonging to the different denominations, and said in substance: "You could not get five churches to unite fifty years ago as they unite and are united now." And as I heard the five different pastors speak to a congregation made up of people from every denomination—yes, and many of them of *no* denomination—I felt that what he said

was true. There has been an advance in the last twenty years. As each one of these five pastors spoke, if he spoke what he really believed and felt (and I think he did), no one of them thought of saying none would be saved except those belonging to his own creed. The thought came to my mind that was beautifully expressed by our own pastor in a recent sermon. I think he said the words were first spoken by Augustine, one of the Fathers of the Christian Church: "In essentials, unity; in non-essentials, liberty; in all things, charity." At the time of my conversion the sight of united bodies of Christian people was inspiring; and whenever I see a movement in this direction it renews and revives that very feeling and inspiration again. In business matters we are learning charity, and, more than all, we are learning to forget injuries. I am sometimes astonished to see people who have had a fierce lawsuit commence friendly relations as soon as it was over; and I am surprised to see the man who has been wronged and cheated turn around and do a kind act to the neighbor who cheated him; and when business matters have unexpectedly brought men together who have had serious difficulty, I have been gratified again and again to see them do each other a good turn, just as if their former unpleasantness had never happened. Notwithstanding serious troubles lie before us as a nation, I do feel that we are gaining ground spiritually, and sometimes people seem to be catching the spirit of the beatitudes without even knowing or realizing that they are unconsciously showing forth a Christian spirit. I once heard a merchant say, who was very patient, and seemed almost Christianlike, "Oh! we never quarrel with people, especially with customers. *That* would not be 'business.'"

I want to call attention to one point made by the good brother who raised the money. It was something like this: "Now, look here, my good people. You know who have subscribed. You have heard their names mentioned here. You will remember pretty nearly just how much each one has given. Tomorrow morning when you go out on the streets you watch their faces. Every one who has helped in this work will wear a good broad smile. The people who have not given any thing will look sour and cross. Probably they will be cross at the weather and at almost everybody. Can you afford to let such an enterprise go forward in your town, and not lend a helping hand?" As he spoke of the enterprise he waved his hand as if directing attention to the electric lights aloft, the beautiful mottos on the wall, the new, easy, and comfortable seats, steam-radiators, not forgetting the ample ventilation and all the other things. Dear reader, are you wearing a broad and happy smile about your daily tasks? If not, is it not possible you have forgotten or neglected to look after the churches in your vicinity, and to lend a helping hand? Have you been present on such occasions as I have mentioned? and have you been one of those who were "gathered together" as in the language of our text?

PROMPTNESS AND RELIABILITY IN BUSINESS.

Their Bearing on the Matter of Work and Wages.

BY A. I. ROOT.

Just now there is not so much being said about competent people being out of work; nor is there so much discussion and contention regarding the wages people shall receive; but I feel once more impressed to take up the subject, and point out at least one reason why so many people do not have a permanent situation, and why the pay is small when they do get a job, and it is in this matter of reliability. We have a notice up almost constantly at the time-desk, which reads something as follows:

"Those who leave their work without giving notice (or getting permission) must not complain if they lose their places without notice."

Notwithstanding this, we are annoyed constantly, year in and year out, by certain persons who will leave their job at any time they feel like it, without saying a word to the foreman or anybody else, and come back the next day, or later, and expect to go to work without any notice or apology for their absence. As an employer of many hands, perhaps I look at this matter from a selfish point of view; but I think there is justice in my position; and, even though there be something to be said on the other side, I feel sure you must all admit that I am at least in some respects right. When you hire a man to do some work for you, it is a contract like all other contracts; and it is one of the first business axioms that any man should either keep his business contract or promise, or get a release from said business contract or promise. When a man is hired regularly at so much a day or hour, he agrees, indirectly if not directly, to be on hand at regular hours; and to be consistent and reliable he should be at his post or else get permission from his employer or foreman to be absent. If he absents himself without saying any thing, or comes an hour or two hours late, he causes trouble and expense in a way one will not readily understand until he has had charge of men, and had charge of work that is important. With the irregular man, the foreman can only keep watching and waiting, thinking he will be along soon. Finally, when it begins to look as if he were not coming, somebody is selected to fill his place. To do this, annoying changes have to be made. Two or three men have to be changed about, frequently, to get one who understands the particular work of the absent man. After these changes are made, and every thing is running fairly well, the absent man turns up. Then they have to go and change back again. Sometimes a new man has been employed temporarily, and this man must either be sent home or kept at a loss. I have known goods to be returned because of defective workmanship; and after an expensive investigation we find the trouble came in right where one man stayed away and somebody else was obliged

to take up his job where he left off. The one who had started his job had careful instruction, and was watched until he did it all right. When the change was made, the one who gave these careful instructions knew nothing about the change, and so did not have an opportunity of making plain to the new man what was wanted.

Perhaps our friends do not all realize that it is only *certain ones* who are missing when they are wanted most. There are those in our employ who are sick every little while, and give that as an excuse for going away without notice. There are others who always miss a train by accident. I suppose it never occurs to them that it looks singular that *they* should always be having such accidents when others around them do not.

Last Saturday (Nov. 6) was a beautiful sunny day, after having had almost a week of rain. Two men were set unloading a car of lumber. They could have finished it easily by night, and their foreman supposed they would do so of course. Late on Saturday afternoon it was discovered that neither one of them had been at work since noon. As all the other hands were busy, the lumber was left, just as they dropped it (when the whistle blew at noon), all day Sunday. On Sunday it rained. Now, neither of these men asked permission to be away, nor did they inform their foreman that they would have to be away. They simply dropped their work, leaving the lumber all scattered about so it was not in condition to be protected from the rain, without saying a word to anybody. One of these men had persisted in doing this thing so repeatedly we had tried to get rid of him; but because of a poor overworked and sickly wife we had taken him back several times, with his promise to give notice, hereafter, when he was to be away.* The other man was one whose wages had been recently advanced, and was a sort of second foreman, so he could, during the noon time, have easily arranged with somebody else to finish unloading the car.

One man once gave as a reason for not speaking to his foreman, that, whenever he had asked to be away, the foreman was almost sure to refuse to let him go, and that was his reason for going away *without* notice. This man was running a machine. If his machine should stop, several others would be thrown out. When I spoke to the foreman about it he said he could usually make arrangements to let a man go when necessary. Sometimes, when there is to be a car loaded, and the force is kept up late at night to do it, it is very inconvenient to have a machine stopped. A great part of the year, however, we have a surplus of help, and a great many times it is really a convenience to us to have a man ask to be away. In the fall of the year we often give vacations for two weeks or more. If the man who wants to be away will talk over the matter with his foreman or employer, very

* I have since learned that this man left his work to attend a sale in the neighborhood. Which is of more importance—attending to your legitimate business and holding your job, or going to a sale without leave of absence?

often arrangements can be made to their mutual advantage to have him away.

Now, there is another point I wish to touch on where you may think I am selfish, and looking on only one side of the matter. There are two ways of getting away from a job. One is to tell the boss that you have *got* to be away for the afternoon, and then go off and leave him before he has had a chance to explain to you the situation of the work. Another is to say, "Mr. A, I should like to get off this afternoon, if you can manage to get along without me." This latter way is getting permission, while the other way is simply giving notice that you are *not* going to work. Some people think it is stooping to ask *permission* of an employer to be away. Now, I will tell you how I look at this. If the President of the United States should contract for some work,* and then something should turn up that he did not want it, I should expect him to get *permission* of *me* to cancel his order; and that is the custom in all other business transactions, except that of employing labor. When a man wants to be released from a contract he *asks* to be released.

On my wheelriders I have frequently called on bee-keepers. They are almost always reliable men, and men of property; yet when they change their plans of work to give me a day or half a day it has pleased me to see them go around and get permission to put off work they had planned. When I visited Mr. Hugh Vankirk, and he wanted to go with me over to the oil-wells he put a lot of tools into his buggy. Then he drove out of his way to where he was to do a job of masonwork out in the country; and he asked for permission to put off building that chimney, or something of that sort, until the next day, explaining the circumstances. Now, I suppose the good housewife had got her carpets all up, and every thing arranged for the new chimney; but in a pleasant and neighborly way she said, "Oh, yes! go ahead; we can get along one day more, any way." She may not have used those very words, but it was something like it. Suppose he had started off and left them and the house all torn up, just because it was a little trouble, and made our drive a longer one, to go around and get a release. Do you see the point? What is for your employer's interest is for *your* interest. Almost everybody nowadays can, if he tries, not only secure a permanent job, but most of us can look forward to an advance in wages; but, my dear friend, you can not hope for any advance when you annoy and perplex your employer in the way I have indicated. Why, high-priced men in every calling expect to give notice when sickness or accident prevents them from being at their accustomed places. Our engineer once sent his wife up before daylight, in the winter time, to let us know that he could not be on hand to fire up. It really

seemed to me almost too bad when I saw the woman coming so early, but it was really the only thing he could do consistently.

One thing more right here before closing:

I have been greatly annoyed because the boys who have been with me all through the forenoon would leave word with somebody else, without saying they wanted to be away, and then "somebody else" would forget to say any thing about it. Sometimes I say, "John, why didn't you tell *me*, instead of telling somebody else? I was right with you just before dinner." John hangs his head, and does not say a word. Sometimes I hear that a certain man had told his companions that, if he did not "feel better" after dinner, he did not think he would work. Now, when his boss or employer passed him several times during the day, he did not say any thing to him about it. He simply mentioned it to somebody who was working with him, and I do not often find out about this until I have spent considerable time in asking if *anybody* knew why this man was not in his place. Do you say it is too much bother or trouble? Then, my friends, you must work for lower wages, perhaps all your life, or you must be out of a job every little while. When we are discussing as to which ones to keep through the winter, the man who is not to be depended on gets left out. Even if he may have unusual skill, if he annoys his employer in the way I have mentioned his skill counts for little or nothing. I have known of a man who had the key to the warehouse in his pocket to stay away without notice, and when we would send a boy after him he could not be found, and we had to break the lock and put on a new one.

If, owing to ill health or some other circumstance, you want a place where you can go and come without notice or warning—why, make a bargain that way, and have it understood, and work for low wages accordingly.

Now, if in this little talk I have helped any man, woman, or child to get a permanent situation or better pay, I shall be glad; and I know that every one who hires help will say amen to the position I take. Reliability and promptness help everybody and every thing. If order is heaven's first law, I think that reliability and promptness must have been the next one.

THE SCIENTIFIC APPLICATIONS OF ELECTRICITY TO THE INDUSTRIES OF THE DAY.

The Place it will Probably Take in our Homes.

BY A. I. ROOT.

A few days ago a good friend wrote to me, lamenting that I had no faith in electricity as a curative agent. I hastened to correct his mistake. What I have said in regard to Electropoise, Oxydonor, and Electrikure, has had no bearing on electricity at all, because there is no electricity about them—never was, and the men who manipulate them and sell them to the suffering sick well know that not a particle of electricity can be detected about

* We have not as yet had an order from the President of the United States; but we did have one from the government at Washington, and the carload of goods went yesterday. If we were not on hand, and up to the times, we certainly should not thus be honored by the head of our nation.

them by the most scientific and delicate instruments. I know real electricity has been used for the cure of diseases. In fact, Ernest has used it quite successfully recently for an acute attack of rheumatism. It banished the pain instantly. I believe, however, it gave only temporary relief, enabling him sometimes to get sleep nights when he might not have done so otherwise. I am sure, however, a great deal of fraud has been practiced, even with genuine instruments, in applying medical electricity. No intelligent physician of the present day claims that electricity of itself cures disease. It oftentimes assists, however, and gives temporary relief, much in the same way that exercise, friction, or manipulation like massage does.

But for the present I have something else to talk about. Not only have I been watching since boyhood to see electricity used to run cars, but I have been watching anxiously of late years to see a *portable* electric lamp. Like the astronomers of fifty years ago who turned their telescopes where Dr. Gall told them to look, I have been watching for an electric lamp that would give an instantaneous light when you "pressed the button," but which would stop the light and stop the waste of force whenever the button should be released; and I wanted this lamp to be portable. I do not like a lantern, for it is a dangerous thing to have around the barn and stables; and when you want it in a hurry it is not lighted. For years past, when I have wanted to consult the barometer on the porch on a stormy night I have been obliged to light a lantern or carry a lamp (smoking up Mrs. Root's bright clean chimneys), or else light match after match in the endeavor to catch a glimpse of the column of mercury before the match was extinguished by the blast.

Within the last month I have secured such a lamp. It cost only \$2.50. The current is produced by four dry batteries. The manufacturers claim these batteries will run 200 hours; and this time may be made up of flash light, one minute at a time, five minutes, ten minutes, or an hour. You may be a whole year in using up the 200 hours if you choose. When your batteries are exhausted, you can get four new ones for 72 cts.; so you see the cost is only about a third of a cent an hour. Where you use your lamp for flashing a light on the dial of a clock when you wake up in the night, and for such purposes, it would last almost indefinitely. I have used it for riding my wheel, and I can easily keep on the walk, or keep out of bad places in the road, the darkest night you ever saw, by the aid of this little electric lamp. The only objection to it is the small amount of light it gives. I understand there are other ones in the market that give a stronger light, but they run for only about twelve hours—that is, after you have pressed the button a sufficient number of times so it all adds up twelve hours, your batteries will have to be replenished; and with this stronger light the expense may be half a cent an hour or more. Such a lamp can be turned upside down, or any way you choose. You can push it down into a sewer,

or use it for lighting up any place where you can not readily get a lantern. In fact, it will light up an overcoat pocket, a rat-hole, or any other place where you want a strong light to penetrate.

I have before told you that, with the proper appliances, the same wire* that runs an electric light will also cook food, heat water, apply heat to any part of the body of an invalid, or for a thousand other purposes where heat or any degree of warmth is wanted. This is comparatively well known. Just now I am in receipt of a catalog stating how, by means of an electric wire, cold may be produced or applied in a similar way. Of course, what I mean by producing cold is abstracting heat. This electric wire runs a motor, and the motor causes ammoniacal gas to circulate through pipes large or small as may be desired, so that you can heat one corner of your room and cool off the other by the simple force of an electric current. I made inquiries in regard to the apparatus, with the view of keeping my potato-cellar so the potatoes would not sprout, even in the month of June. I can keep our cellar cold very well until along in March, without any apparatus. After that, with the aid of the cold-machine, during occasional warm spells I can keep the potatoes just right to plant, or for table use. Of course, this has already been done by the use of ice. But ice is expensive, bulky, and is apt to be sloppy. Our potato-cellar is already lighted by turning the button of an electric lamp when we want to go into it. Now, if I can, by turning another button, cool it off when it gets too warm, I shall be quite happy—or at least I think I shall. The electrical refrigerating-apparatus is going to be superior to an ice-chest because you can have it close up to the dining-room and you can have your heat and cold so near each other as to save many steps. When the good wife can, by suitable arrangements, avoid the necessity of keeping a hired girl, it is quite a saving in money, and sometimes a saving in nerves. Don't understand that I am tilting at the average help in the home; but I have been thinking that, if electricity should begin to encroach on the domain of the hired girl, it might have a wholesome effect—we will say on the home, for instance.†

Once more, in a recent number of the *Scientific American* I saw a picture of a dynamo and water-motor combined. The price is only \$8 00. The said dynamo has capacity enough to run a single lamp. I wrote the manufacturers, saying that, whether they knew it or not, they were coming pretty near solving the problem of making the wind or wintry blast, as it passes over our homes, furnish the light for the home circle. On figuring it up, however, I found that, at the present stage of

*When I use the expression "wire," I mean the usual combination of two wires used for the ordinary electric lamp. The Electropoise and Oxydonor people are the only ones I ever heard of who propose to send any thing through a single wire.

† Since the above was written I have received prices on the refrigerating-apparatus mentioned. At present the smallest size costs \$300, which, for the time being at least, will keep it out of our potato cellar.

progress in the matter, it will take from seven to eight barrels of water an hour, under 40 lbs. of pressure, to run a ten-candle-power electric lamp. Let me explain. An eight or ten foot windmill would, with a moderate well, pump water enough every day to run a water-motor three or four hours in the evening. This water-motor would carry a lamp that would light up any ordinary room so anybody could read the finest print with ease in the remotest corner. After locating the apparatus it would cost practically nothing. After your lamp has shed its light for about a thousand hours, counting only the hours while it is burning, you would have to get a new one, which would cost you 15 or 20 cts. The water, after it has moved the motor, could be used for watering animals, filling a pond so as to be used afterward for irrigation, or any purpose you choose. The principal expense of this home electric light would be a tub or tank to hold the water in an elevated position. If you have a windmill on a hill higher up than your dwelling, you could very easily get the water-pressure; and your tank would have to be large enough to hold, say, something like 100 barrels, so as to have your lights run all the same if the wind should not blow for two or three days. Storing so much water is rather expensive, I know; but at the present stage of science a storage battery would be still more expensive. Where you have a running spring up on a side hill several feet higher than your home, an electric light could be put in at no expense except the \$8.00 motor and dynamo, and piping enough to bring the water down to the motor. Natural water-powers will very soon be all or very nearly all utilized in the production of electricity; and now I am waiting and watching to see the power of the wind, that is everywhere over and about us all, utilized in a similar way. It may not come in my time, but thousands who read these pages will surely see it—at least that is the opinion of your friend and well-wisher, Uncle Amos.



STRAWBERRIES.

The bulletin on strawberries, for September, from the Ohio Experiment Station, is one of the most valuable—at least to me—that has ever been sent out. Considerable is told us about summer planting. During the past season, plants set out very early in the spring were sending out runners in June; and in July very nice plants were rooted sufficiently to take up. These were planted out (at the station) in August, six inches apart, because such an early growth meant more plants than ought to stand on so limited an area. The new bed with plants six inches apart, set out in July or the fore part of August, would make a matted row with plants at exact dis-

tances. Of course, we had plenty of rain last spring; and to keep off the sun our experiment station shaded the plants with green bushes. By the time the green leaves on the bushes were dried up the strawberries could hold their own. In this way the strawberries can take the place of early peas, early potatoes, and other early vegetables. The bulletin says, in regard to the use of water:

Instances are on record where the increase in the strawberry crop has repaid the entire cost of the pipes, labor, and water, in a single season, the water being furnished by the city water works.

But further on we read in regard to irrigation:

It has been found that the loss of moisture from unplowed ground may be in excess of that from cultivated soil to an amount equal to an inch and three-fourths of rainfall in one week. A man with a team and sprinkling-cart could not replace the water on an acre of land as fast as it escapes by evaporation from the soil, when it goes off at that rate, if he had to haul the water one-fourth of a mile.

In regard to the importance of stirring the soil after every light shower, see the following:

The importance of stirring the soil soon after a shower is generally known; but in practice, cultivation after slight showers is often neglected. This is because the soil does not become compacted, and no crust forms after slight showers, hence the necessity of stirring the soil at once is not apparent.

And again:

As the two are commonly used, a cultivator is a better machine for irrigating than a sprinkling-cart.

In regard to fertilizers we read:

Experiments here with chemicals on strawberries have, thus far, been negative.

Their report on varieties agrees very nearly with my own. Brandywine is given a very high place. They say in regard to it:

The bulk of the crop ripens very late. It excels the Gandy in productiveness and color.

They also indorse my high recommendation of Carrie, and say as I have said:

Every fruit-grower will appreciate an improved Haverland.

In regard to the Lovett, we read:

One would hardly be justified in discarding the Lovett, where a reliable pollen-bearing variety is wanted.

And I was also glad to see them giving the Margaret the high recommendation I expected them to accord it. They say:

Under high cultivation the Margaret has given surprising results. For fancy berries it is unsurpassed.

They object to the Marshall unless it is for home market, because it is rather soft. The Wm. Belt also receives many favorable words. They close with the following:

It is too good a variety to be hastily discarded. It is particularly valuable for the home garden or near market.

The most promising new varieties they sum up as follows:

Aroma, Anna Kennedy, Beauty, Copernicus, Clyde, Carrie, Enormous, Glen Mary, Hall's Favorite; unnamed seedling from A. Luther; unnamed seedling from H. Oreiller; Portage, Ruby, Rio, Staples; unnamed seedling No. 1 from S. H. & A. J. See; Tennessee Prolific.

And here is a list that can *not* be recommended, in the opinion of the experiment station:

Bouncer, Columbian, Equinox, Eleanor, Epping, Gardner, Holland, Mary, Princeton Chief, Satisfaction, Sunrise, Timbrell, Weston.

The old standard varieties that have gotten a permanent place with almost all strawberry-growers in the land, and that can be recommended for general cultivation, are the six following:

Bubach, Brandywine, Greenville, Haverland, Lovett, Warfield.

I felt somewhat gratified to know that at least four of the above six have been in our condensed list of varieties for years past. Ohio people can get a copy of this bulletin, No. 82, by writing to the Experiment Station, Wooster, O. Those who live outside of this State can find out by inquiry on what terms this very valuable bulletin will be forwarded.

Humbugs and Swindles.

"REPORT ON A RECENTLY PATENTED PROCESS OF BUTTER-MAKING."

The above heading is the title of a circular from the Department of Agriculture at Washington. There have been so many frauds and swindles told to ignorant and usually poor people, for a process of making a greater amount of butter than is usually made from the same amount of milk, the Department has issued a circular warning the people against it. The closing words of this circular ought to be sufficient to warn at least everybody who sees this from investing in similar frauds and swindles:

The fact that more or less milk can be incorporated in butter, without the addition of any compound, has been known for several years, and was stated in Farmers' Bulletin No. 12, Nostrums for Increasing the Yield of Butter, which was issued from this Department in 1893.

From the above extract you will see that this thing has been running, and people have been swindled all over our land, since 1893. It is a burning shame that the thing should still go on.

CIGARETTES.

I clip the following from a newspaper:

A fire started by a lighted cigarette destroyed a large building in St. Louis, causing a loss of about \$1,000,000.

Now, please do not imagine that I lay the blame of this especially to the cigarette business. The moral that it points out, it seems to me, is something like this: There ought to be some closer restrictions in regard to this matter of going about with a pipe, cigar, or cigarette, or any thing else that contains fire, in such a careless way as this.

CONVENTION NOTICE.

The Ontario Bee-keepers' Association will hold their annual meeting in the city of Hamilton, on the 7th, 8th, and 9th of December next. A cordial invitation is extended to all those interested in bee culture to attend. W. COUSE, Sec'y.

Streetsville, Ont., Can., Nov. 17.

The Minnesota Bee-keepers' Association will hold its annual meeting in Minneapolis, at the new courthouse, on Wednesday and Thursday, Dec. 8 and 9. The Horticultural Society convenes on the 7th, and continues for four days. DR. E. R. JAKES, Sec'y.

Crystal, Minn., Nov. 13.

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 Including their discounts for goods wanted for use another season. It will pay you to send me list of goods wanted.
M. H. HUNT,
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FOR SALE.—My entire stock of bees and supplies at a bargain. Italian stock. I have a large queen trade and will sell in whole or part. Address at once.
 THEODORE BENDER, Canton, O.

Prosperity.

It is here and still coming. So are the **carloads of bee-keepers' supplies** coming from The A. I. Root Co.'s to my distributing points, thus enabling me to sell at their wholesale and retail prices. I keep the best of every thing you need. Send for my illustrated 36-page catalog FREE.

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 FREMONT, - - - MICHIGAN.

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To all new subscribers, and also to those who renew before their subscriptions expire, and inclose \$1.00, we will send the *Busy Bee*, a monthly bee-paper, in addition, free.

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Wants and Exchange Department.

WANTED.—To exchange 140 colonies of bees, with all fixtures belonging to a first-class apiary, for good horses and mules.
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WANTED.—One saw-mill, feed and shingle mill.
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WANTED.—To exchange pair of St. Hubert man-trailing blood-hounds, butcher tools, foundation-mill, and bone-mill, for bee-hives in flat or Italian bees.
 ELIAS FOX, Hillsboro, Wis.

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| New York Weekly Tribune, best 20-page newspaper in the United States..... | 1.00 |
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FARM BEE-KEEPING.

The only bee-paper in the United States edited exclusively in the interest of the farmer bee-keeper and the beginner is THE BUSY BEE, published by Emerson T. Abbott, St. Joseph, Mo.

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Queens,

Untested queens, 50c each; tested, 75c; Breeders, \$2. Either leather or golden. My golden breeders breed all 5-banded bees.

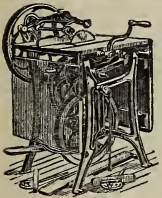
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Bee-keepers' Supplies in general, etc. Send for our new catalog. "Practical Hints" will be mailed for 10 cts. in stamps. Apply to

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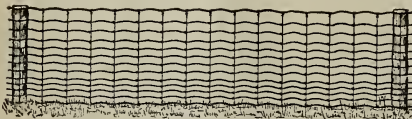
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Seneca Falls Mfg. Co., 44 Water St., Seneca Falls, N. Y.

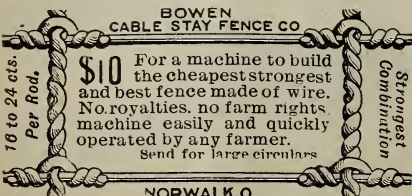
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The Spaniards Say

"By the street of By-and-by one arrives at the house of Never." While fence building is delayed damages sometimes result which would pay for the fence. SUCH economy (?) does not "lead to wealth."

PAGE WOVEN WIRE FENCE CO., Adrian, Mich. In writing advertisers mention GLEANINGS.



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in all the many shows in which it has participated, there must be something in the superiority claims of the RELIABLE INCUBATOR. Self regulating, entirely automatic, you put in the eggs, the Reliable does the rest. All about this and many things of value to the poultry man in our new book. Send 10 cts. for it.

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BEESWAX.

We will pay 25 cts. cash, or 27 in trade, for average wax delivered here. We expect to need 50 to 60 tons of wax the coming season, and can therefore use all the pure beeswax you can send us. For choice clean bright yellow we usually pay an extra cent or two.

ALL GRADES OF COMB HONEY.

We have had a brisk demand for comb honey, and for a time we could hardly get it in fast enough to fill orders. We now have a good supply of all grades at the following prices: Fancy white, 13; A No. 1 white, 12c; No. 2 white, 11; fancy amber, 12; A No. 1 amber, 11; fancy buckwheat, 10; A No. 1 buckwheat, 9. Above prices are for lots of 100 lbs. or more. In 500 lbs. in original crates, as received from producers, 1 ct. per lb. less. The amber grades are especially fine.

CLOVER EXTRACTED HONEY WANTED.

With the very abundant crop of clover the past season we ought to be able to get plenty of good clover extracted honey. We are, however, having difficulty in securing enough to supply the demand. We have decided to raise our selling price half a cent a pound, so we shall be able to pay a little more, and may be we can find it easier. Our price will be 7 cts. a pound in 60-lb. cans, 2 in a case. Those who have honey to dispose of will confer a favor by sending us a small sample, telling how it is put up, and what they ask for it.

ANOTHER CAR OF CALIFORNIA HONEY.

We have already sold two carloads of California honey, and are beginning on a third car just received a few days ago. We sold one whole car to one customer. When we were closing out the first car the orders came so thick and fast that it was all gone weeks before we expected, so that we were without any to fill orders with for two or three weeks. We are pleased to say that we can now ship promptly. While the freight on this last car was a little more than on the previous one we propose selling at the same prices: 60-lb. cans, 2 in a case, of water-white, at 6½ cts. per lb.; light amber at 6 cts. In 5-case lots or more, ½ ct. per lb. less. We are developing a large trade among grocers on No. 25 jars filled with California honey, and labeled, shipped 2 doz. in a case, at \$3.50 per case; 6 cases, \$20.00. We can also supply it in square jars, 1-lb., 1 doz. in a case, at \$1.80; ½-lb., 2 doz. in a case, at \$2.25; 5-oz., 2 doz. in a case, at \$1.70. You have little idea what may be done to increase the consumption of honey till you go to work in a systematic way to educate the general public in various ways to overcome prejudice and create a demand. I do not believe that there is any danger of overproduction of honey if proper measures are taken to increase its consumption.

TINKER PERFORATING ZINC.

Among the many makers of bee-keepers' supplies there has been none who turned out nicer or more accurate work than Dr. G. L. Tinker, of New Philadelphia, Ohio. His work was all done by himself, and, consequently, was limited in amount, and high in price. The doctor, for various reasons, has discontinued the manufacture of supplies; and his successors, not having his skill, have not made a success of the business. One of the doctor's achievements was an automatic machine for perforating zinc, the product of which has had the reputation, wherever known, of being the most perfect for bee-keepers' use of any ever made. The machine is a wonderful piece of mechanism. After setting it going on a sheet of any size up to 21x44 inches, with all the attachments properly set, it will work away, making one hole at a time, automatically reversing itself back and forth over the sheet till the last hole is made, when it throws itself out of gear and waits your leisure to change the sheets and start it going again. In our zinc-perforating machine there are seventy punches and dies, and it is practically impossible to have all the holes exactly the same size, while on the Tinker machine every hole is made by the same die and punch, and therefore all the holes must be of the same size. We have come into

possession of the Tinker machine, and expect, for the coming season, to supply this as well as the old-style zinc. The price of the Tinker zinc will be somewhat higher than the old style, as follows:

Tinker zinc strips, ¾ x 18 to 20 inches long, 2 rows of holes, \$1.20 per 100. Tinker zinc sheets, 24x38 or 24x40, 60c per sheet. Tinker zinc honey-boards, 12x19½ to 20, at \$1.50 for 10. For each additional inch in width add 1¼c. For each additional inch in length add 1c. For each lot of less than 25 pieces, add 25 cents for setting machine; 25 or over, no extra charge. These prices are about 20 per cent less than what Dr. Tinker charged, and about 50 per cent above the price of the old-style zinc. The Tinker zinc is as near perfection as is possible to make it—no burr edges or variation in size of perforations. We can also furnish the Tinker zinc in drone size—that is, with perforations which will exclude drones but allow the queens to pass.

Special Notices by A. I. Root.

Blackwalnuts, gathered in the fall of 1896, but in good condition, only 10 cts. a peck.

THAT NEW POTATO IN THE GREENHOUSE.

We cut it so as to make 42 eyes. These are planted in pots of jadoo fiber. Of course, they are rather slow in starting, just after the potato was dug from the ground. But about a dozen of the eyes have already made a good start. Some of them are showing green leaves. We expect to grow them all winter in the jadoo fiber, watered with the jadoo liquid.

WHO IS DR. SALISBURY?

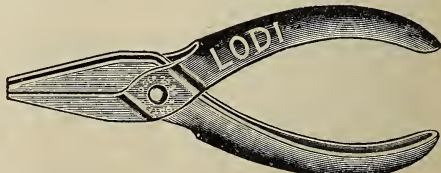
There have been so many inquiries in regard to the lean-meat diet that we have provided ourselves with a little pamphlet headed as above, which we shall be pleased to mail any one free of charge. It gives a pretty full explanation of the Salisbury treatment; and with the directions given, almost any one can test the matter for himself. I expect it to do real missionary work among those who are suffering from impaired digestion.

SEED POTATOES.

Since our last we have sold a lot of seconds Bliss Triumph and Early Ohio, therefore the only kinds we have now in seconds are Thoroughbred, Freeman, Monroe Seedling, and Sir William. The two latter are \$1.25 per barrel—the others, \$1.50. For regular list of the seed potatoes we have for sale, see page 726 of our issue for Oct. 15. We have still left a few seconds of Bovee and Manum's Enormous. Bovee seconds are \$1.00 per bushel; Manum's Enormous, seconds, 75 cts. We will still ship potatoes at our risk from danger of freezing, to any point south of Cleveland, Ohio. For points further north we will line the barrels with heavy paper, and do our best to get them through safely; but we should not like to be entirely responsible.

SOMETHING NEW IN THE WAY OF PLIERS.

When I was a very small boy I began to use pliers. I wanted them for handling wire, piece of tin, for taking apart clocks, and for repairing other machinery. When I learned the jeweler's trade a pair of pliers was almost constantly in my fingers or in my pocket. I soon learned to value good pliers, and I have carefully watched the improvements in their manufacture. While passing through the store a few minutes ago one of the clerks showed me a pair of pliers costing only 10 cts., that eclipses any thing yet heard of in the line of strength and efficiency, in lightness, and for a very little money. Below is a picture of one of them, but it does not do the beautiful little tool justice.



We have three sizes of them, costing 10, 15, and 20 cts. respectively. They are made of sheet steel stamped out with appropriate machinery, and yet they are

stronger, neater, and hold better than the old-fashioned kind that cost two or three times as much. They are so light that we can send them by mail for only 3, 4, and 5 cts. respectively. The dimensions are, smallest, 4 inches; medium, 5 inches; largest, 6 inches. If I had been the inventor of this kind of pliers I would swing my hat high in the air and shout "Hurrah!" like a schoolboy.

VEGETABLE-GREENHOUSES IN DECEMBER; WHAT SHALL WE PLANT IN OUR BEDS?

Well, judging from past experience we are going to fill our greenhouses mostly with lettuce, as it seems to be most in demand in our market as a winter vegetable. Water-cress may be grown to a limited extent. It is very easy to grow, is not affected by any disease, and will stand quite a little freezing without injury; so if your greenhouse is not very warm it will be just right for water-cress. If you have a market for salads they will go all right along with lettuce and water-cress. Be sure you have lettuce-plants enough—too many will not do any harm. Where your space is limited, better transplant them at twice apart; the next time, about 7 inches from center to center. If you have a market for green onions they will go nicely with the above. A little parsley, which is also very hardy, will be very nice to mix in with other winter salads. And do not forget spinach. We have for several seasons past sold it at the same price as lettuce, and it is ever so much easier to grow. For seeds of any of the above, see our fall seed-catalog, mailed free on application.

NOT FOR SALE. Why do the largest bee-keepers in the world use Bingham Smokers and Uncapping-knives 19 years? Such men know a best thing when they use it. While we have the only exclusively smoker-factory in America, we don't advertise it. It is not for sale. But we do, and have 19 years, made exclusively Bingham smokers and honey-knives. If you get a high-priced Bingham smoker and honey-knife you will have the best as long as you take good care of them. They never go out.

T. F. BINGHAM, Farwell, Mich.

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WALTER S. POWDER,

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Mountain bee ranch for sale. Good location; telephone connection with three railroad stations.

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BEAGLE HOUNDS. Fine stock and fair prices. "Beagles," Box 20, So. Cabot, Vt.

BEE=SUPPLIES.

We have the best-equipped factory in the West. Capacity—one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring **best** goods at the **lowest** prices, and prompt shipment.

Illustrated Catalog, 72 Pages, Free.

We also manufacture Tanks of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

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BOTH ONE YEAR ONLY \$1.25.

By special arrangement with the publishers, we are enabled to offer the American Agriculturist in combination with GLEANINGS IN BEE CULTURE at the unparalleled low rate of \$1.25 for both papers one year. The American Agriculturist is published in five editions. The N. E. Homestead, the Eastern, Middle, and Southern editions of American Agriculturist, and the Orange Judd Farmer. Each contains matter relating to its own locality, as well as the latest and most accurate market reports for the country in general. It has departments relating to all branches of farming, articles written by the most practical and successful farmers, supplemented with illustrations by able artists. Short stories, fashions, fancy work, cooking, young folks' page, etc., combine to make a magazine of as much value as most of the special family papers.

A sample copy will be mailed FREE by addressing AMERICAN AGRICULTURIST, Columbus, O., or New York, N. Y.

TAKEN separately these two papers cost \$2.00, consequently every subscriber under this offer will get

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Premium Books. For 10 cents extra, as postage, you can have your choice of any of the following standard books FREE: "Profits in Poultry," "Farm Appliances," or "Farmer's Almanac" (ready December 15). Send your subscriptions direct to

THE A. I. ROOT CO., Medina, Ohio.

Two Papers for the Price of One.

The **Farm Journal**, of Philadelphia, a monthly agricultural journal of 16 pages, sent **One Year Free** for one subscription to **Gleanings**, with \$1.00, paid in advance, either new or renewal. In the case of a renewal, all arrears, if any, must be paid in addition to one year in advance.

The **Farm Journal** is now in its 20th volume, and takes the lead among all the *low-priced* agricultural journals of this country and of the world. It gives no chromos, puffs no swindles, inserts no humbug advertisements, lets other folks praise it, and makes good to subscribers any loss by advertisers who prove to be swindlers. The editor was born on a farm and reared at the plow-handles, and the contributors are practical men and women.

The regular price of this excellent journal is 50 cents a year, and it is well worth it; but by special contract with the **Farm Journal** we are enabled to make the above very liberal offers.

THE A. I. ROOT CO., Medina, Ohio.



A Bargain!

Only \$1.50.

We have made arrangements to furnish THE OHIO FARMER, of Cleveland, Ohio, and GLEANINGS IN BEE CULTURE, both papers, for only \$1.50.

The **Ohio Farmer** is well known as one of the very best, largest, and among the leading agricultural papers of America. A 20-page, 80-column paper EVERY WEEK in the year; employs THE VERY BEST WRITERS that money can procure; a strong, fearless defender of the agricultural interests of this country, and CLEAN in both reading and advertising columns. IT HELPS MAKE THE FARM PAY.

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